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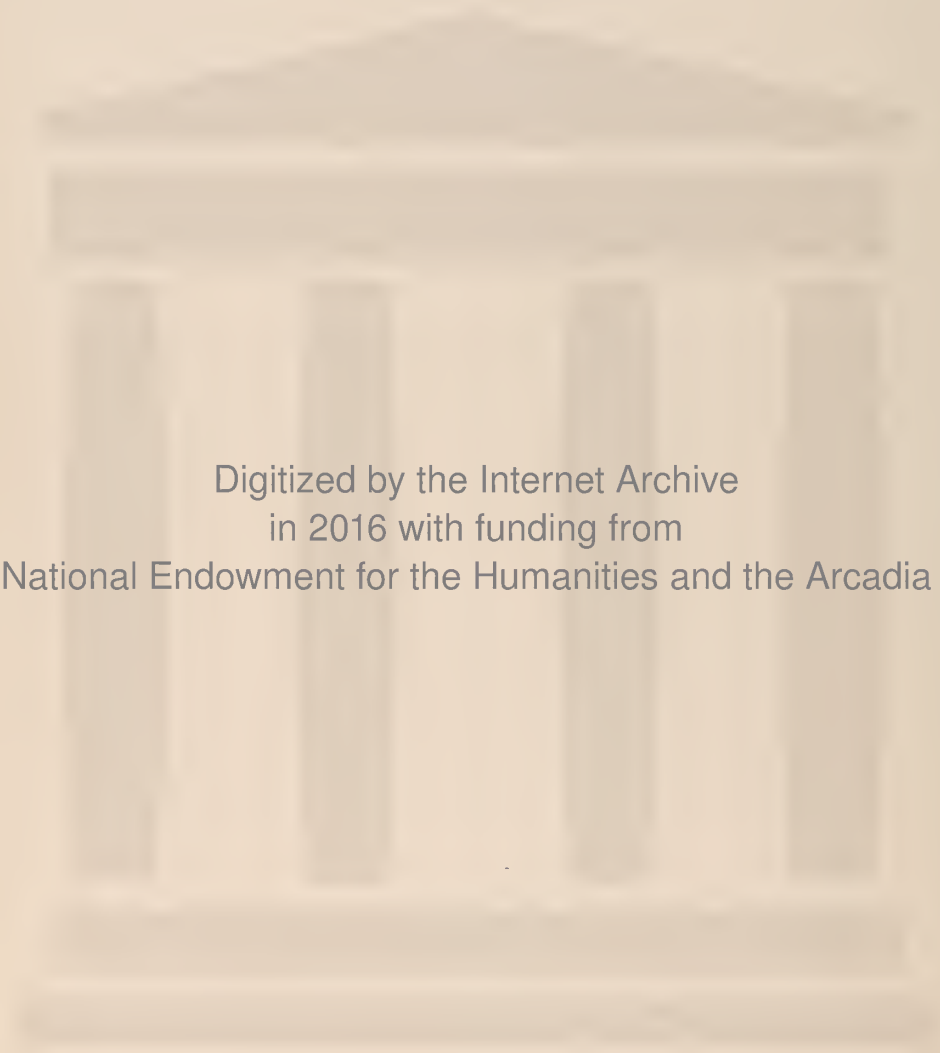

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CERTAIN SYMPTOMS DUE TO DISEASES OF THE URINARY TRACT WHICH ARE OFTEN DIAGNOSED AND TREATED AS OF OTHER ORIGIN.*

GUY L. HUNNER, M. D.,

Baltimore, Md.

From the Gynecological Department of the Johns Hopkins University Medical School

In presenting a paper before an audience such as this, which presumably represents a cross section of our profession, I perfer chiefly to keep in mind the family physician and his problems.

My forty years of active contact with the complaining patient convinces me that the urinary tract stands first in giving rise to symptoms that are easily mistaken as having their origin in some other domain.

Headache, backache, gastro-intestinal disorders, pelvic pain, and bladder disturbances, with or without definite pathological findings in the urine, are some of the more common symptoms having their origin in diseases of the urinary tract but too often diagnosed as due to disturbances in other organs. The family physician is the key man to whom the patient first brings these complaints and, if he fails to arrive at a correct interpretation and if his efforts at giving relief prove futile, the patient too often is referred to the wrong specialist and spends weeks, months, or years in a fruitless endeavor to regain health through rest cures, psychotherapy, treatment of the gastro-intestinal tract, or operations.

What general rules have thus far been developed that may serve as signposts to guide the diagnostician against taking the wrong path? In the first place, disease of the urinary tract is usually accompanied by bladder symptoms, but these are frequently of such slight moment that the patient fails to mention them unless directly and minutely questioned on the point. Too often the woman who has intermittent spells of frequent micturition, especially if they occur only at the menstrual epoch, or during pregnancy, or while having a "common cold," takes it for granted that these symptoms are natural occurrences under these conditions, and therefore does not include them in the complaints unless directly questioned. However, about 25 per cent of patients who have symptoms due to ureteral stricture do not have bladder symptoms at any time, even when the stricture and consequent urinary stasis have led to such symptoms as headache, nervousness, backache, and gastro-intestinal disturbances, so there is a wide margin for error if one insists on the presence of bladder symptoms before thinking of an involvement of the urinary tract.

Another helpful rule, and this one of great interest to the gynecologist, was strongly emphasized many years ago by my beloved chief, Howard A. Kelly. "The occurrence of bladder symptoms usually points to some lesion in the urinary tract." Those of us who have had wide experience in gynecology have not infrequently had patients come to us with complaints chiefly centered in the bladder, and on making the physical examination we have found definite lesions in the genital tract, such as a relaxed outlet, a cystocele, an ovarian cyst, a myoma of the uterus, signs of pelvic inflammatory disease, or an apparent marked tenderness of the ovaries. It is quite natural under such circumstances, particularly if the urine is normal, to neglect a thorough survey of the urinary tract and to proceed with the gynecological work, assuring the patient a symptomatic cure. But far too often, when such a patient passes from her post-operative rest period to

*Read at the meeting of the Norfolk County Medical Society, April 9, 1934.

resume the activities of life, the major complaint of nagging bladder symptoms returns, to the honest vexation of the family physician and the surgeon. How much better for every one concerned if we bear in mind our rule No. 2, and, before doing the supposedly necessary gynecological operation, make a thorough investigation of the urinary tract. We may find that the major symptom of bladder distress is due merely to a chronic urethritis or chronic trigonitis, which, if secondary to a former gonorrheal infection, is usually quickly relieved by applications of silver nitrate solution. If these simple lesions are due to a distant process furnishing a focal infection, such as disease of the tonsils, teeth or sinuses, we shall find that the local silver applications do little or no good, but we are at least in a position to warn the patient that the pelvic operation may have to be followed by attention to the areas of focal infection.

Should the urologic examination reveal the more serious lesions of elusive ulcer of the bladder or ureteral stricture, we can be more certain that the proposed pelvic operation is not going to relieve the patient's chief symptoms, and it then becomes a matter of surgical judgment whether the gynecologic or the urologic problem demands our first attention.

A third rule to be kept in mind is that a normal urinalysis does not always mean a normal urinary tract. A patient may have bilateral ureteral stricture with profound injury to the kidneys without any warning sign in the urine. About 20 per cent of our patients suffering from ureteral stricture develop a pyelitis with signs in the urine that cannot be ignored in our preliminary examination. About 50 per cent of them show at times a few erythrocytes, a few leucocytes, a few casts, or a trace of albumin, warning signs which even at this late day sometimes are reported from the laboratory as of "no special significance." This leaves about 30 per cent of our stricture patients, who show an absolutely normal urine, surely a wide margin for error if we depend upon the urinalysis to decide for us whether or not there exists a lesion in the urinary tract. If we follow our former custom of ignoring the signs of trouble in many of the 50 per cent, in which the urinalysis is almost normal, we add a still wider margin for error in attempting to decide in which of our cases the symptoms are largely or wholly due to lesions in the urinary tract.

At the risk of repetition, and in the endeavor to help the general practitioner as well as the specialist, let us briefly analyze a few of the symptoms commonly found associated with ureteral stricture. Common sense, largely based on daily observation, reminds us at once that each of these symptoms may result from one or more of a multitude of causes, but if one simply remembers that ureteral stricture is one of the most frequent pathological lesions in the human organism and that it may give rise to any of the symptoms mentioned, we have added to our diagnostic armamentarium a lever that may prove of great value in the differential diagnosis in an individual case.

A *fever* that defies all other diagnostic efforts in the search for a cause may prove to be due to ureteral stricture, renal stasis, and absorption of toxic products. *A chronic headache* for which no other cause can be found may prove to be of similar genesis, and clear up permanently when proper means are employed to establish adequate renal drainage. *Nervousness,* irascibility, asthenia, and even serious mental depression leading to suicidal impulses in a patient who has previously been well-balanced. strong and energetic, may be found to depend on poor renal drainage. *Chronic backache,* for which no other cause is discoverable, may be due to the presence of stricture and stasis. Renal backache occasionally may be referred high up in the thorax region, and, if it happens to be accompanied by a low-grade fever, it is sometimes thought to be due to tuberculosis, even though no other evidence of this disease can be found.

Renal and ureteral stasis due to ureteral stricture may give rise to low backache referred to the lumbosacral or sacro-iliac joint regions, when the most careful investigations by the orthopedist may be negative. Hip-joint pains and even dysfunction in walking, and pains down the thighs and even to the great toe have been eliminated by proper treatment for ureteral stricture.

Gastro-intestinal symptoms, ranging from simple aversion to food all through the gastro-intestinal syndrome to the abominable symptoms of chronic mucous colitis, have yielded to the one line of treatment directed to the urinary tract. In the gastro-intestinal syndrome due to urological lesions there are probably two chief factors to consider: (1) the renal stasis and consequent failure of elimination

of toxic products; and (2) the rich net-work of sympathetic nerves connecting the ganglia of the kidney and ureter with those of the splanchnic system. It is in the abdominal and pelvic fields that symptoms due to ureteral lesions have led to our most frequent errors in diagnosis, resulting in a plethora of useless treatment and worse than useless surgical activity.

I am under no delusions about the lack of agreement even among urologists as to the incidence and importance of ureteral stricture. Because the concept is of comparatively recent development some physicians, governed by our traditional and often commendable conservatism, have given it no serious thought. Some of you are old enough to remember the struggle for recognition of the concept of appendicitis as a disease entity. Although Fitz's classic paper in 1886 should at once have found our entire profession eager to make use of its life-saving implications, those of us who were doing surgery in the early years of this century, fifteen to twenty years after Fitz's contribution, remember with what vehemence the idea of appendicitis was combated by some of the older and more prominent general practitioners, aided and abetted by not a few surgeons.

Some of you who have devoted thought to the question of ureteral stricture may have concluded that the diagnosis of this condition is difficult and technical and purely the concern of the urologist. As a matter of fact, the diagnosis in most cases can be made with a fair degree of certainty by using our simplest diagnostic methods, available to every practitioner. A careful history, a thorough physical examination, and tests of the urine, suffice in most cases to make the diagnosis more certain than obtains with many of our other intra-abdominal diseases, and enables the physician to refer the patient to the urologist before other specialists for confirmation or negation of his diagnosis.

The family physician, and especially the patient, is in a bad way if the latter really has stricture and is referred to a urologist whose methods do not discover stricture when it is present. Unfortunately, there are still many urologists who make a negative diagnosis for stricture if a plain catheter passes to the kidney without appreciable obstruction. In Lewis' Practice of Surgery (Vol. 8, Ch. 11, p. 95) I reviewed 100 consecutive ureteral stricture cases, showing that the plain Nos. 7, 8 or 9 catheter passed to the kidney without appreciable obstruction in 63 per cent of the patients. However, in fifty-three of these 100 patients the reaction was so bad after the passage of a plain catheter without bulb that anyone with experience would suspect the presence of stricture, a point too often overlooked by the urologist, who has not familiarized himself with ureteral stricture work.

Unfortunately for our diagnostic decisions, the urogram does not always show gross evidences of a dilated tract above a narrow area in the ureter. I always prefer to find, as we might logically expect in every case, that the patient has developed positive X-ray evidence of urinary stasis above the stricture area, for experience has shown that in dealing with the patient who has a widely dilated upper tract we can usually predict to a nicety just how many treatments will suffice to relieve symptoms. I have learned from long experience to give the most guarded prognosis in the case showing such slight roentgenologic changes that one overlooks them if not guided by the collateral evidence furnished by the bulb test.

There can never be unanimity of opinion based on radiographic evidence as to what constitutes a stricture. At best we can only say that the radiogram shows evidences of dilatation above a certain area in the ureter. Whether the causes of this dilatation are extrinsic or intrinsic is usually not suggested by the urogram. There will probably always be great difference of opinion as to what the bulb test contributes to the diagnosis. When is the bulb on its withdrawal suddenly obstructed by a local "spasm" of the ureteral wall? When is the "hang" of the bulb due to extrinsic causes, such as tumor or inflammatory changes outside the ureteral wall? When is it due to an intrinsic narrowing of the wall?

Our mission as physicians is to restore the patient to health. The patient is not deeply concerned with what you or I name the thing that is giving her "dis-ease," providing we contrive to restore her to a reasonable degree of health and comfort. While we cannot give complete relief to a 100 per cent of patients in whom ureteral stricture seems to be the most important cause of the symptoms, yet a sufficiently high percentage of this group does get the desired relief to make our therapeutic activities in

this field about as satisfactory as in any other branch of medical or surgical endeavor.

Furthermore, when we realize that we are dealing with a condition of urinary obstruction due to a mechanical cause, and that no form of medication is of lasting benefit, and that usually we can give greater relief by the relatively simple urological methods than we can by any form of operation, these facts add a dignity and a satisfaction to our work, which fully make up for the drudgery incident to the harassing attention to minute details which the work so frequently involves.

Let us close by presenting a brief review of what agitation of this question of ureteral stricture for the past eighteen years has meant for medicine. Many surgical and gynecological clinics scattered throughout the world now insist on a thorough preliminary investigation of the urinary tract in the case of patients whose abdominal or pelvic symptoms and physical findings leave a reasonable question as to the correct diagnosis. This routine saves many useless operations formerly undertaken on incomplete and erroneous diagnoses. Furthermore, the operation of exploratory laparotomy, formerly resorted to in a most casual manner, is now found to be necessary only in the exceptional case. Every surgeon can testify as to the futility in many instances of such exploratory operations.

While thousands of such operations are now being circumvented every year, it is naturally in the field of frankly urological conditions that our greatest progress has been registered because of a better appreciation of the incidence of ureteral stricture and what the resulting impaired drainage means to the welfare of the kidney.

Hydronephrosis. About one year ago, while preparing for a nephropexy, I noticed an unusual degree of expectancy on the part of our staff members, and turning to our resident gynecologist I asked him how many fixations of the kidney had been done during his five years of service, and he answered that this was to be the first one he had seen. At my request he later examined the operating-room records for the period of my last year of residency in 1902, and found that we had done twenty-nine nephropexies in that year. The volume of urological material was then much smaller as compared with our present service. Our urological literature still carries reports of nephropexies, at times numbering more than 100 cases from a single clinic. This is one of our most useful and valuable operations, but such reports would seem to indicate that many urologists are not yet awake to the fact that ureteral stricture is the cause of nearly all cases of hydronephrosis, and that the relief of symptoms is obtained with greater certainty by attacking the cause rather than the kidney.

Pyelitis. The older surgeons present here today will no doubt remember what a *bête noir* to the profession was presented by the victim of chronic pyelitis, and how frequent and unsatisfactory was resort to operation for this condition. Today, after preliminary investigation, we can usually tell these patients fairly accurately how many ureteral dilatations will be necessary before they will be free from their infection and symptoms. Nor do we longer resort to internal medication or pelvic lavage to accomplish the cure, for theory is backed by experience in demonstrating that the kidney is an ideal irrigator if we give it a chance. *Post-operative pyelitis,* formerly a not infrequent complication after abdominal and pelvic operations, is now almost never encountered in our clinic.

In communities in which ureteral stricture is being more generally recognized, and drainage is being instituted for the earlier symptoms of stricture, acute and chronic pyelitis, as diseases of adult life, are being encountered far less frequently than they were fifteen years ago.

Chronic pyelitis in infancy and early childhood, formerly usually considered as of gastro-intestinal origin, is now more generally recognized as secondary to impaired ureteral drainage. I know of nothing more striking in the realm of therapeutics than the promptness with which these little victims improve in their ability to assimilate nourishment after the clearing up of the pyelitis, brought about by improved urinary drainage.

Pyelitis of pregnancy seldom demands therapeutic abortion if attention is given to ureteral drainage. Many victims of multiple spontaneous abortions due to renal failure have been rendered able to carry to term by the simple treatment of ureteral stricture.

Renal and Ureteral Calculus. Time prevents an extended review of what it means to the urologist and to his patient when the former grasps the significance of the close relationship existing between the presence of bilateral ureteral stric[illegible]

and formation of calculi in one or both upper urinary tracts. Briefly, by attention to this relationship, our results in treating this disease have been revolutionized. The incidence of its recurrence, in the kidney or ureter once freed from stone by operation, or by methods of dilatation, has been vastly reduced, and the later development of stone on the opposite side is of very rare occurrence. In my day as hospital interne and resident we frequently had in the wards one or more patients dragging along for weeks after a nephro- or pyelo-lithotomy because of prolonged lumbar drainage. The odor from such patients often polluted the entire ward. Now we practically never see this condition except in patients who come to us from some other clinic where operation has been performed without preliminary attention to the ureteral drainage.

Essential Hematuria. This condition, formerly considered as belonging on the border-line between medicine and surgery, has in more recent times fallen chiefly to the care of the surgeon. Operations have not been followed by results greatly superior to those obtained by the expectant method. Nephrectomy cures the bleeding if it is unilateral, but too often this radical removal of an approximately normal kidney is followed later by bleeding from the remaining kidney. Less radical measures, such as splitting the kidney from end to end and immediate approximation of the two halves by suture, or decapsulation with nephropexy, have not yielded more than 50 per cent of cures.

Since the discovery that bilateral stricture attends this condition in most cases, and probably accounts for the various renal lesions that cause the bleeding, by simple restoration of good renal drainage we have obtained results far superior to those following any type of operation. Needless to emphasize that ureteral stricture, being such a frequent lesion, may occur in combination with any type of renal neoplasm. Failure of ureteral dilatation to bring about prompt cessation of the bleeding may mean that our diagnostic methods have failed to reveal a co-existent renal lesion, and an early exploratory renal operation becomes necessary in the occasional case.

Nor should we forget that the focal infection, so often back of the ureteral stricture, may also furnish fresh insult directly to the kidney tissues and result in continued bleeding even after good ureteral drainage is restored. I have had several patients, who, after apparent thorough dilatation of the ureters, continued to bleed until an active focus of infection was eradicated.

Renal Tuberculosis. Since the discovery about eight years ago that all our patients admitted with renal tuberculosis, whether bilateral or unilateral, seem to have bilateral ureteral stricture, we have been greatly interested in the relationship of renal drainage to this type of infection. Whether some patients with an early unilateral renal tuberculosis, and good function on the diseased side, can overcome the disease through the establishment of better drainage remains an interesting problem for the future. For the present we need not look upon bilateral renal involvement as pessimistically as we have in the past, for through better drainage methods we can undoubtedly prolong life and reduce the discomforts in many of these cases. The same rule applies for patients who have but one kidney and this the seat of tuberculosis.

Bright's Disease. We need not enter into the controversy as to what constitutes Bright's disease or what may be its etiological factors. The urologist occasionally sees the patient with a so-called surgical lesion of the kidney, and who, in addition to the usual symptoms of fever, pain, pyuria, and hematuria, also shows marked signs and symptoms which from the medical viewpoint we consider as indicative of Bright's disease.

In dealing with hydronephrosis, chronic infections of the kidney, calculus, and the so-called essential hematurias, we have occasionally noted hypertension, cardiac decompensation, headache, delayed mental reaction, heavy breath, aversion to food, anasarca, and even typical uremic convulsions, and have been surprised and delighted in many cases to see these symptoms clear up under the one treatment for establishing better ureteral drainage.

In the past the urologist has not been asked to see the patient with these various signs of Bright's disease unless there was reason to suspect a complication by one of the so-called surgical conditions. However, I have dealt with a few non-surgical cases that would have to be classified as representing typical Bright's disease (see Case 6). These patients have had ureteral stricture and have shown such marked improvement under ureteral treatment that one is forced to ask what part, in some instances, mechanical stasis may have in the develop-

ment of this disease. I feel certain that the future offers opportunity for valuable research in this field. It is in children and young adults showing signs of Bright's disease without evident etiology that careful investigation should be made concerning the conditions of drainage.

CASE REPORTS WITH LANTERN ILLUSTRATIONS

With a collection of thousands of slides one is tempted on an occasion such as this to select such illustrations which, from the X-ray evidence alone, must carry conviction. Such a choice of material would have the added advantage that a report could be made on end-results of treatment on each case presented. However, many of you have heard and read some of my previous contributions, and I concluded that it would be more valuable to discuss about fifty slides taken on patients seen in the past few months. This has the advantage of bringing before you some of the questions occurring in the daily work of any one interested in the problems of ureteral stricture. Lack of space allows reproduction of only a few of these illustrations together with abbreviated case-histories.

Case 1.—(Fig. 1). Illustrating bilateral ureteral stricture with elusive ulcer of the bladder, a condition seen fairly frequently, and the patient often treated as a neurasthenic, probably because of the lack of marked changes in the urine.

Mrs. L. N., age 38. Admitted to the Medical Service July 23, 1932. Transferred to the gynecological service May 10, 1933. *Medical diagnosis:* Chronic invalidism; under-nutrition; chronic pelvic inflammatory disease, inactive; manic depressive psychosis. *Gynecologic diagnosis:* Interstitial cystitis or elusive ulcer of the bladder, and later, ureteral stricture, bilateral.

Past History. Measles and chicken-pox as a child, profuse vaginal discharge in 1913, ceased after D. & C. in 1926; tonsillitis in 1923, tonsillectomy in 1924; always constipated, and has used laxatives.

Present Illness. In 1929 began to have insidious, dull, dragging pain located bilaterally just beneath the costal margins, and occurring intermittently. The last bad attack of this nature occurred one month ago. Attacks last one to two hours and seem to bear no relation to meals or activities. Says she often feels worse when lying in bed. In the beginning there was no radiation of the pain, but later on it often went down the right side into the pelvis. Still later, bladder symptoms began, with frequency and burning, and she now voids two to three times at night. After several months she began to lose weight and feel very tired. About two years ago began to have elevation of temperature, sour taste, and often felt nauseated. A physician in Florence, Italy, diagnosed "spasm of the intestines," but several months of treatment did not improve the condition. She then went to a Paris hospital because of fever and frightful pain in the bladder. Her physician said there was no evidence of pyelitis. An intravenous injection of urotropin was given. Later the appendix was removed and pronounced normal. On admission to the Johns Hopkins Hospital the chief complaints were fever, asthenia, bad taste, mild lumbar pain, a feeling as if a mass were present in the hypogastrium, and

Fig. 1.—Case 1. Note the absence of X-ray evidence of stricture. Pelvis smaller than normal. Calices possibly slightly clubbed. Ureter about normal. The slight ureteral angulation opposite the fourth lumbar is the site of a dense stricture as shown by repeated bulb tests. A similar condition holds for the left side, and each ureter has a dense stricture in the broad-ligament region.

bladder symptoms. Urinalyses were negative except for the occasional finding of a few leukocytes or a trace of albumin. After nine months of treatment by rest, forced feeding, and psychotherapy, the patient's weight had increased from 111 to 137 pounds, but otherwise her condition remained about as on admission. In May, 1933, she was examined cystoscopically and a diagnosis was made of elusive ulcer for which an operation was done. At the

same time a general abdominal exploration was made with negative findings except for a chocolate cyst of the left ovary which was removed. This relieved some of the symptoms in the region of the bladder, but the low fever recurred, the patient continued to have the constantly coated tongue with bad taste, and the discomforts in the upper flanks. I was consulted in October, 1933, and bilateral stricture was discovered (see Fig. 1).

Case 2.—(Fig. 2). Illustrating bilateral ureteral stricture with sterile hydronephrosis. Recent diagnosis of tumor of right kidney; nephrectomy advised.

Fig. 2.—Case 2. Showing hypdronephrosis of 40 c.c.; left kidney held 15 c.c. Note filling defect opposite fourth lumbar and a relative narrowing just below this. Dilated ureter from broad-ligament region to the narrow area opposite the fourth lumbar vertebra. Bulb hangs at 23 cm. and 6.5 cm. above external urethra. Symmetrical strictures found on the left side with the bulb test and shown by urogram. Half-hour intravenous 'phthalein showed R. 15 per cent, L. 20 per cent.

Case 3.—(Figs. 3 and 4). Illustrating bilateral ureteral stricture, bilateral hydronephrosis, recurring stones in right ureter, no symptoms on left side.

Mrs. H. G., admitted January 20, 1934, age 43, weight 228 pounds, 7 para. In 1928, in another clinic, had several treatments of the right ureter, and four or five months later passed a ureteral stone. No subsequent treatments, and remained free from symptoms until May, 1933. Since then severe right renal colic attacks accompanied by nausea and vomiting.

Plain X-ray (Fig. 3) revealed three large ureteral calculi in mid-pelvic portion of right ureter. First treatment January 20, 1934, dilatation of right ureter with bougies of increasing size up to 5.6 mm., 17 Fr.; retention catheter left in right side for drainage. January 25th, Fig. 4 taken to demonstrate to the students the presence of bilateral stricture in spite of absence of symptoms on the left side. Stones passed spontaneously on January 29th. Patient will now be followed until both ureters are well dilated.

Fig. 3.—Case 3. Plain X-ray showing three large ureteral stones a few centimeters above the bladder.

Fig. 4.—Case 3. Bilateral urogram demonstrating bilateral stricture with bilateral hydronephrosis, R. 125 c.c., L. 25 c.c.

Case 4.—(Figs 5, 6 and 7). Illustrating bilateral ureteral stricture, multiple calculi of left kidney. Colon bacillus pyonephrosis, left, 300 c.c. content. Right hydronephrosis, slight, 11 c.c., sterile culture. Probably cholecystlithiasis.

M. D., admitted January 30, 1934, age 38, married twenty-one years, 7 para, menstruation normal. Complains of severe attacks of pain in the left upper quadrant since seven years of age. Five years interval between the first two attacks. Attacks then at two to three-year intervals until recently. Attacks six months ago, three months ago, and five days ago, accompanied by jaundice. Until these three attacks there had been no other symptom except the severe pain in the left upper quadrant, forcing the patient to go to bed. In the recent attacks accompanied by jaundice the pain in the left upper quadrant and the jaundice disappeared after a few days in bed. Two months ago the patient discovered a mass in the left upper abdomen.

Fig. 5.—Case 4. Note slight dilatation of the right ureter above the broad-ligament region, and slight dilatation of the right renal calices (11 c.c. pelvic content) which might be accounted for by compensatory hypertrophy. Multiple calculi in the left kidney.

Examination revealed a large mass in the left upper quadrant, its lower pole reaching below the trans-umbilical line. This showed an excursion of 3 to 4 cm. on deep breathing. It was not especially tender except over the area taken to be the kidney hilum (site of the large stone). The right kidney was just palpable over its lower pole and was not tender. The ureters were tender on palpation over

Fig. 6.—Case 4. Note evidences of stricture in the left broad-ligament region with slight ureteral dilatation above. Note the triangular stone shadow in the small kidney pelvis, and beyond this the irregular shadow in the large calices where the NaI solution has replaced some of the thick pus which had been washed from the kidney. Three small stone shadows in the lower calices.

the pelvic brim region and in the broad-ligament regions. No thickening felt. There was palpable resistance and slight tenderness over the gall-bladder region and several of the X-rays showed probable shadows of gall-stones. While later examinations showed the left pyonephrotic kidney to contain colon bacilli, the first culture from the bladder was reported as negative, and this led to speculation on the possibility of a renal tuberculosis, because of

Fig. 7.—Case 4. Artist's drawing of the removed kidney.

the large mass, the pyuria, the thirty-one years of symptoms, and the comparatively good health of the patient. Against this diagnosis was the absence of bladder symptoms, absence of palpable thickening of the left ureter, and cystoscopy showing a normal

bladder except for a small nodule of edema to the median side of each ureteral orifice. Numerous examinations for acid-fast bacilli were negative.

Case 5.—(Fig. 8). Large visible tumor mass filling upper left abdominal quadrant. Intravenous Skiodan injection strongly suggesting renal tumor. Investigation by retrograde injections and bulbed catheters showed bilateral ureteral stricture with moderate bilateral hydronephrosis (16 c.c. content on either side), the left pelvis and calices showing no suggestion of distortion. G-I X-ray series negative. Abdominal incision, removal of large cyst of the tail of the pancreas.

Mrs. E. C., admitted January 23, 1934, age 61, 1 para. Had always enjoyed good health until one year ago when she began to lose weight and noticed that she was growing weaker. There had been some burning after eating, considerable nausea, and some vomiting. Never hematemesis. Finally developed soreness in left upper quadrant and two months ago discovered a lump which has increased in size. No urinary symptoms.

Fig. 8.—Case 5. Intravenous Skiodan. Note the large dense shadow filling the left upper quadrant and covering the left half of the first three lumbar vertebrae. Note long thin left renal pelvis and spider-leg-like pattern of calices.

Case 6.—(Fig. 9). Illustrating hypertension and nephritis, hematuria, albuminuria, and great numbers of casts, including many of the large terminal variety. Hypertension reduced and urinalysis almost normal after the establishment of better renal drainage.

Mrs. V. McC., admitted March 21, 1933, age 64 years, married seventeen years, no pregnancies. Appendectomy twenty-eight years ago, fractured pelvis in auto accident fifteen years ago. Influenza and bronchopneumonia in 1919. Hypertrophic arthritis of finger-joints for several years. Intermittent neuritis-like pains of the extremities for several years. In the summer of 1929 developed Heberden's nodes. In November, 1929, began having attacks of "grippe" with slight fever and general pains. Considerable pain throughout the back, worse in the lumbosacral region. In bed during February and March, 1930, with constant slight fever. In March, Dr. Boggs diagnosed nephritis and anemia. In June, 1930, the patient was in the Woman's Hospital for three weeks under the care of Dr. Walter Baetjer because of fever, night sweats, and pains in the back. The diagnosis was registered as "secondary anemia—origin unknown." After active treatment, including a blood transfusion, the hemoglobin rose from 58 to 79 per cent. For the first five days in bed the temperature ranged from 100.8° to 102.2° F. The blood chemistry and blood culture were negative. X-ray report by Dr. Waters: "No evidence of organic lesion in the gastro-intestinal tract. No evidence of metastases in lumbar spine or pelvis. Some atrophy and a moderate degree of infectious arthritis. Chest negative. Teeth: no abscesses." B. P. 160—170/80. After two weeks of about normal temperature the patient was dismissed as much improved.

For the next three years she was in fair health but continued to have occasional attacks of slight fever with night sweats and the anemia and asthenia persisted.

In February, 1933, the patient had "influenza" followed by tonsillitis, and about March 1st began to have a nagging pain in the left kidney region, about the left hip, and down the sciatic nerve, and the urine became smoky red. Dr. Edgar Sandrock called me in consultation March 21st, because of the persistent hematuria and the pain in the left renal region. A catheterized specimen of urine appeared almost like pure blood and showed albumin + + + +, many r.b.c., numerous leukocytes, and many casts of all varieties, including numerous terminal casts, some of them so large that they almost reached across the high-power field. The patient was sent to the Johns Hopkins Hospital

where examination showed B. P. 210/110, w.b.c. 5,200, Hbg. 55 per cent; a two-hour intravenous 'phthalein test showed—first hour 250 c.c., 40 per cent; second hour 200 c.c., 5 per cent.

Fig. 9.—Case 6. Catheter withdrawn until the bulb hangs in the broad-ligament region. Note absence of positive X-ray findings. Considerable difficulty in getting small bulbs to pass high strictures on each side 23 cm. above the external urethra.

The abdominal and pelvic examinations were essentially negative. Palpation of the ureter-broad-ligament regions caused complaint of severe pain and an intense desire to void. There had been no bladder symptoms. The culture from the bladder was negative. We were confronted with the problem of a possible neoplasm of the left kidney, but the patient was in such poor physical condition that an operation was not to be considered, even if a positive diagnosis of tumor could have been established. Because of the fairly typical history of nephritis over a period of several years, and because of the ureteral tenderness and the knowledge that ureteral stricture is one of the most common causes of renal hematuria, I decided (not without misgivings as to the possible results of any form of treatment) on an investigation of the ureters.

This revealed multiple strictures on both sides, high strictures about 23 cm., and low strictures 8 cm. above the external urethra. The patient was dismissed April 5th after sixteen days in the hospital, each ureter having been dilated twice and carried to a 3.6 mm., 11 Fr. bulb. The bladder urine on April 4th, the day of the last treatment, after careful centrifuging, showed in the high-power field, w.b.c. 3-4, an occasional r.b.c., no casts. On May 16th, Dr. Sandrock reported "the patient is greatly improved, she gets out in her garden daily. The urine still contains a heavy trace of albumin, but it is clear of r.b.c. and casts. The systolic pressure varies from 140 to 160." The patient was readmitted May 23rd, when we found the B. P. 195/90, the catheterized urine showing a rare r.b.c. and w.b.c., a few hyaline and granular casts, no albumin, sp.gr. 1002. The two-hour intravenous 'phthalein test showed: first hour 650 c.c., 45 per cent; second hour 350 c.c., 30 per cent. Two more treatments were given on each side up to a 4 mm., 12 Fr., dilatation. When the patient entered on June 6th for the third set of treatments she reported that she had been downtown shopping without bad results. "There are no further pains in the flank or hip region, and the arthritic pains in the back have ceased; the stiffness of the fingers has greatly improved."

After my summer vacation I inquired about the patient, to be told that she had purchased a car and had learned to run it so she could daily take her husband to and from business. On February 7, 1934, Dr. Sandrock reported that the patient had recently had some headache, some discomfort in the heart region, and at times a suggestion of pain in the left posterior flank. During February and March, 1934, she came to the office for three dilatations on the left side and two on the right, up to a 4 mm. bulb. The bladder urine was examined on each of these five visits and albumin was not present. Once one hyaline cast was found and on two occasions a long slender cylindroid was noted. Dr. Sandrock reported on March 21st that her systolic pressure was 150 and that she was symptom-free.

HYPERAESTHETIC RHINITIS (HAY FEVER)—TREATMENT BY ZINC IONIZATION.

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In an article published in 1932, Grafton Tyler Brown gives a history of what is termed "hay fever" as found in medical literature. He says that in 1819 John Bostock, an English physician, was the first to describe the condition as a definite clinical entity, though symptoms of itching nose and sneezing from the odor of roses had been noted by Borallus in 1565, and by Binningerus in 1673.

Charles Blackley, another English physician, originated the skin test. He was himself a sufferer from this type of rhinitis, and in 1865 he applied to abrasions on his arms and legs the pollen of many grasses and flowers, obtaining positive reactions. He also correlated his symptoms with the amount of pollen floating in the air by examining the pollen content of slides which had been first covered with glycerin and then exposed to the air.

The term "hay fever" is rather a misnomer, as the sufferer has no fever and the symptoms are not caused by hay; but so firmly fixed is this name in medical literature and in the public mind that it will most probably always he used. My own preference is for the term hyperaesthetic rhinitis, adding the adjective seasonal or perennial to designate whether the symptoms occur only at certain times of the year or are constant.

The symptoms are too well known to be emphasized here, but we must bear in mind the itching and burning of the nose and inner canthi with profuse serous rhinorrhoea and lachrymation. The nasal discharge does not tend to become purulent, but varies in amount during the prevalence of the attack, sometimes ceasing almost entirely. A general feeling of malaise is present and lack of interest in surroundings. Appetite is usually poor and temperature is more liable to be subnormal than elevated. In the perennial type, such symptoms persist through the entire year and seem in no way connected with wind-borne pollen. Nasal obstruction with consequent forced mouth breathing, more pronounced at night, adds to the misery of the sufferer.

Those affected with hyperaesthetic rhinitis, particularly the seasonal type, have a marked tendency to become asthmatic. The asthma is at first seasonal, but later becomes perennial. When this occurs, the suffering is much aggravated, tending to cause the patient's outlook on life to become very gloomy. Perennial hyperaesthetic rhinitis must be differentiated particularly from cerebrospinal rhinorrhoea. The discharge of cerebrospinal rhinorrhoea contains some sugar and no mucin, as a result of which it is sweetish in taste and when dried on the handkerchief leaves it soft and fluffy. The discharge of hyperaesthetic rhinitis is salty to the taste, and the mucin which it contains causes linen upon which the discharge is dried to be stiff. The sufferer from cerebrospinal rhinorrhoea frequently complains of a sense of fulness in the head, which symptom is relieved by a profuse discharge from the nose. There is no sneezing and hyperaesthesia of the nose and inner canthi in cerebrospinal rhinorrhoea. No irritation of the skin about the nares and upper lip is produced by the cerebrospinal discharge. The fact that cerebrospinal rhinorrhoea is rare does not free the examiner from the responsibility of making a diagnosis when the condition is present.

In examining a potential case of hyperaesthetic rhinitis a careful examination of the accessory sinuses is indicated. Deviations of the septum should be scrutinized and their bearing upon the symptoms should be considered. Foreign bodies in the nose may give rise to symptoms that simulate hyperaesthetic rhinitis. These foreign bodies may be either rhinoliths or bodies introduced into the nose and not removed.

Correcting nasal deformities and affording proper aeration and drainage of the sinuses or the removal of a foreign body may clear up a seeming case of hyperaesthetic rhinitis. This form of surgery should be done when indicated, for thus the nose, if not relieved of the symptoms, is better prepared to benefit from measures directed toward the cure of hyperaesthetic rhinitis.

The appearance of the nasal mucosa in hyper-

aesthetic rhinitis of the seasonal type is usually pale and somewhat boggy and edematous, with a serous discharge evident in the nasal cavity. In some cases of the perennial type the mucosa is more red and turgid in appearance, but it should be borne in mind that many cases of the latter type have the same pale appearance that is found in the seasonal type.

This appearance of the mucous membrane suggests that biochemistry and nutritional changes play a part in the condition. In the pale condition, there is probably a para-sympathetic predominance with some glandular deficiency, while in those cases where there is a reddened, easily infected membrane, there is found a sympathetic dominance and over-activity of the suprarenals.

The above findings would suggest that, in treatment of these cases of hyperaesthetic rhinitis, we should increase the intake of acid ash food and possibly give some hydrochloric acid. In the red mucous membrane, the alkaline ash food intake should be increased.

The above statements are as yet not fully enough proven to be stated didactically, but sufficient observations of the nasal mucosa as a dietetary guide have been made to make them well worthy of trial.

As to other treatments of hyperaesthetic rhinitis, my own preference is for zinc ionization of the nasal mucosa. This form of treatment was adopted after noting the large precentage of cases relieved or cured by this method, as published by Philip Franklin, Warwick, Haseltine, and a personal conversation as to his results with Dr. Charles H. Riordan. Arthur M. Alden, in a publication subsequent to those of the above, reports similar results.

Since all these observers give results so much superior to those attained by any other method of treatment, its adoption seems well worthwhile. Ionization is no new method of treatment. It was discussed as early as the eighteenth century, when the static machine was the only source of electricity. Many articles appeared during the nineteenth century dealing with the introduction of various substances into the tissues by means of the electric current.

Philip Franklin, to whose article I am indebted for the above historical note, further says, "Experience has taught us that physiological and chemical changes are effected by the action of the galvanic current on the body tissues, and that hyper-irritable areas are rendered less sensitive. In 1914, I first began to note the effect of zinc chloride and zinc sulphate solutions on the sensitive areas of the nasal mucosa. These areas are particularly affected in hay fever and vasomotor rhinitis. They are situated mainly on the surface of the inferior turbinate bone, the lower border of the middle turbinate, and the adjacent surface of the nasal septum. They readily respond to the changing humidity and temperature of the inspired air. Their reactions are controlled by a delicate nerve mechanism involving, it is thought, a nerve center in the medulla oblongata, which receives impulses through the fifth, tenth and eleventh cranial nerves and the sympathetic system. The normally maintained physiological balance may be upset by a variety of factors—extrinsic, acting through the inspired air, intrinsic, acting through the blood stream, and reflex, from stimulation of distant parts of the vagus and sympathetic system. The clinical expression of the imbalance so produced are congestions of nasal mucosa, sneezing, rhinorrhoea, and itching of the inner canthus, nasal vestibule, roof of mouth, neck, and, as is sometimes experienced in hay fever, of more distant skin surfaces. Drake (*British Journal of Dermatology,* 1928) associates an asthma-eczema-prurigo complex with these clinical manifestations, which he ascribes to a dysfunction or disharmony of the autonomic nervous system. It is outside the scope of this article to consider the debatable causes of this nasal imbalance or its relation to the specific or allergic phenomena in general. Intranasal ionization is essentially a local treatment, and, at least in hay fever, the relief of symptoms seems to be independent of any exciting cause.

"The treatment by zinc ionization of the hypersensitive areas in the nose has in my experience given relief in a higher percentage of cases than have other methods. The relief is obtained with relatively little discomfort and with few applications."

Franklin's technique differs from that used in this country. He employs similar zinc solution and electrode, but uses two to five milliamperes of current for from fifteen to twenty minutes, frequently treating both sides of the nose at the same sitting and giving several treatments at intervals of seven to ten days.

The technique of treatment which seems to have given the best results in this country is to treat but one side of the nose at a sitting; the other side is treated a week later.

The side to be treated is first carefully packed with cotton swabs wrung out of a one to 1,000 solution of adrenalin chloride. Every possible part of the nasal cavity is brought into contact with these swabs. After allowing these to remain ten minutes, they are removed and similar packing with a local anaesthetic is made. As a local anaesthetic in this work nupercaine has seemed best to me. It is used in a 2 per cent solution. Butyn in 2 per cent solution gives good anaesthesia but has not seemed to give such complete insensitiveness as the nupercaine. This packing is allowed to remain for ten minutes following with swabs saturated with a solution of 1 per cent zinc sulphate in water seven drams and glycerine one dram. The swabs must be applied to every crevice of the nasal cavity. The zinc electrode which has been covered with cotton and dipped into the solution is introduced into the nose after packing the upper portion, then swabs are packed around the electrode to fix it firmly. The positive pole is connected with the nasal electrode while the indifferent electrode is bound firmly to the forearm on the same side as the side of the nose which is being treated. The current is then slowly turned on until the indicator marks ten milliamperes, and is allowed to remain at this for ten minutes. During the time of administration of the current, the milliamperemeter must be watched for it will vary slightly in volume and must be regulated. There is no discomfort suffered by the patient, but there is a slight metallic taste in the mouth and some excess salivary secretion.

After turning off the current and removing the packing, the nasal mucosa will be found to have a whitish appearance. The patient should be sent home and told to go at once to bed taking something to relieve pain, for a severe headache is liable to occur. I suggest the taking of allonal tablets, each three grains, every hour until three tablets are taken, unless sleep supervenes or pain is relieved before the third dose is taken. The pain is not of long duration, but the patient should remain in bed till the following day.

In about twenty-four hours after having treatment, the side of the nose which has been treated will be found filled with a gelatinous secretion somewhat polypoid in appearance. This is firmly fixed to the lining of the nasal cavity and should not be interfered with. After three or four days this secretion can be easily blown from the nose, or, if it is not, can be gently separated from the mucous membrane with a probe and syringed out. The appearance of the nasal cavity at this time is normal or slightly more red than normal.

From 50 per cent to 75 per cent of patients are entirely symptom free for two or more years following treatment, according to results reported by Warwick, Alden, and Franklin. A few return for a second treatment before entire freedom from symptoms is noted. The cases that have been treated by me were all of this past season only, and were ten in number. They all were entirely free of symptoms immediately following treatment. Two of them were of the perennial type.

Warwick says, "At first I thought I was producing merely a local change in the patient's nasal mucosa which perhaps rendered the nerve endings less sensitive to allergens, but further work, particularly on certain cases of food allergies, manifested by urticaria and asthma, and cases of angioneurotic edema, who had never complained of nasal symptoms, have convinced me that the reaction is not local, but systemic."

Two of my cases were able to have treatment on only one side, yet both of them were much freer from obstruction, and irritation on the untreated side than they had previously been, while the treated side was completely free from symptoms. This seems somewhat to bear out Warwick's idea of a systemic effect. Alden has made sections of middle turbinates of patients who had been ionized from one to seven months previous to the biopsy, and says that without exception the mucosa was normal and intact.

McMahon, on examining the mucosa of the ionized frontal sinuses of dogs, says, "Definite destructive changes were brought about in the mucosa of the frontal sinuses of dogs by the ionization of the zinc sulphate solution. These changes consisted of ballooning, fragmentation, and complete destruction of the surface epithelium, a marked edema of the subepithelial tissues and an extravasation of free red blood cells into these tissues from greatly dilated and ruptured capillaries."

He used 2 per cent zinc sulphate solution with five milliamperes of current for twenty minutes. The changes which he mentions are not such as would result in final destruction of the membrane, but rapid repair of this process would occur. It is possible that the patient's relief from symptoms is due to the changes brought about by this process of destruction and repair.

CONCLUSION

Ionization of the nasal mucosa renders a large majority of treated patients free from sensitiveness to the wind-borne pollens.

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WANDERING SPLEEN WITH TORSION OF ITS PEDICLE—REPORT OF A CASE.*

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The spleen is not very firmly fixed in its normal position, yet it is seldom found elsewhere in the abdomen. When this organ does wander away from its proper location, it must carry its large blood supply with it by means of a vascular cable which becomes elongated as the spleen descends in the abdominal cavity. When this elongated pedicle becomes rotated on its axis, an alarming abdominal catastrophe is produced.

While approximately ninety-two such accidents have been reported in female subjects, the condition is very rare in the male. In 1918 Petridis reported the first splenectomy for wandering spleen with torsion of its pedicle in a man. Pieri operated on an Italian soldier for this condition in 1919. Southam, in 1921, reported the case of a six-year-old English boy. In 1925, John E. Sutton, Jr., reported the first case in America occurring in a male. This was a boy of thirteen years. From London, in 1927, H. A. H. Harris reported the case of a man twenty-seven years old. In Harris' case, the pedicle of the spleen was twisted and the organ had wedged itself so firmly in the pelvis that it had produced intestinal obstruction by pressure occlusion of the sigmoid colon. Eric M. Fisher, of Sidney, Australia, in 1930, reported a sixth case in a youth of sixteen years.

I have recently had under my care a boy of eight years with this condition. As a review of the literature reveals that only six other such cases have been reported in the male, and only one other (male or female) under ten years of age, I feel that my case is of sufficient interest to warrant placing it on record.

E. S., a white boy of eight years, was admitted to the Johnston Memorial Hospital, Abingdon, Va., April 5, 1934; referred by Dr. Bruce Rhea, of Mountain City, Tenn. He complained of abdominal pain, nausea and vomiting of four days' duration. His general health has been fairly good but he has never been robust. He has an attack of sick headache every month or two. His appetite has been good, but certain foods, especially beans and onions, cause abdominal pain and vomiting. When he is hungry he frequently complains of pain in his stomach; this is sometimes relieved by food, and often by soda. When he was about two years old he suddenly screamed with abdominal pain. His abdomen was universally tender and he was jaundiced.

About two years ago he had a similar attack of generalized abdominal pain and tenderness and vomited light green fluid. His maximum weight is fifty-two pounds.

Present Illness: Four days before admittance he arose in the morning feeling fine. After he had

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dressed, his mother noticed that he was bent over and he began to complain of severe abdominal pain. He took some soda but immediately vomited. He was given castor oil; this he also vomited. He had a normal, spontaneous bowel movement that morning. His physician sent him some medicine that night which alleviated his symptoms to some extent. His family physician saw him on the second day and gave him several enemata without relief of his abdominal pain and vomiting. On the third day he vomited less and felt a little better. He would not take any food because he was afraid it would make his stomach hurt. On the fourth day his abdomen became greatly swollen and was tender all over. Enemata were ineffectual. He continued to refuse nuorishment. He gagged and tried to vomit but nothing came up.

Examination: The patient is an under-developed and under-nourished boy of eight years; lying in bed in fair amount of generalized abdominal pain. His thighs are flexed on the abdomen.

Temperature 98.8; pulse 128; respiration 26.

The abdomen is markedly distended but symmetrical. It is very rigid and universally tender. The maximum tenderness is located in the right lower quadrant. The abdomen is silent on auscultation.

The heart sounds are plainly audible all over the abdomen. No tumors or masses can be palpated. Otherwise the physical findings are essentially negative.

White blood count 13,800 with 88 per cent polymorphonuclear leucocytes. The urine was negative.

A provisional diagnosis was made of peritonitis, probably due to a ruptured appendix.

The patient was an unusually intelligent and cooperative boy and its was deemed best to put him on Fowler-Ochsner-Murphy treatment and defer operation for the time being. The next morning the upper abdomen was a little less distended. On April 7th the abdomen was somewhat less distended but still very tender and rigid. He was given 500 c.c. of 10 per cent glucose solution with 15 units of insulin, intravenously, and a low S. S. enema. On April 8th, the upper and left sections of the abdomen were loosening up a bit, and an indefinite mass could be felt, extending from a point 3 cm. to the left of the umbilicus across to the anterior-superior spine of the right ilium. At this time operation was advised.

Under light gas-oxygen anesthesia and local infiltration of novocaine, a low right rectus incision was made. The intestines were red and distended, and there was a considerable amount of bloody fluid in the peritoneal cavity. A large, solid tumor, identified as the spleen, occupied the space between the umbilicus and the right anterior-superior iliac spine. It was attached by a long pedicle resembling the umbilical cord. The pedicle was twisted on itself three complete revolutions. The tail of the pancreas was not involved. The artery and vein were both thrombotic. The spleen was bluish-black in color and enlarged to approximately three times its normal size. It was easily delivered through the low right rectus incision; the pedicle clamped, divided and ligated, and the spleen removed. The bloody fluid was evacuated with a suction machine and the incision closed without drainage. Sections of the spleen showed nothing of particular interest except enormous engorgement and scattered areas of thrombosis.

Except for moderate abdominal distention for the first post-operative day, the boy made a smooth and uneventful recovery. The incision healed by first intention. He was discharged from the hospital on April 22nd, or fourteen days following his operation. On April 18th, the tenth post-operative day, the red blood cells were 3,400,000, hemoglobin 64 per cent, and white blood cells 9,200 with 49 per cent polymorphonuclear leucoytes.

On August 3, 1934, the boy returned to the hospital for a follow-up examination. He looked well and felt well. His hemoglobin was 71 per cent; red blood cells 3,710,000; white blood cells 12,200. Polymorphonuclear leucocytes 48 per cent; small mononuclear leucocytes 40 per cent; blood platelets 215,000. The red blood cells were normal in shape and size.

The underlying causes of splenoptosis are obscure. Some of the cases seem to be of congenital origin and others are acquired. The fact that only one other case has been reported in a person under ten years of age lends support to my impression that a congenital wandering spleen is a very rare condition. It is a fact that splenoptosis occurs almost exclusively in females. In the reported cases in which the obstetrical history was given, twenty-one

cases have been non-parous, fifty-three have been parous and thirty-four have borne from two to fourteen children. This, probably, explains the impression of many surgeons that the relaxed abdominal wall, due to repeated pregnancies, is a frequent cause of this conditions; yet we often see cases in which all of the abdominal organs are prolapsed except the spleen. In other cases the wandering spleen is the only visceroptosis present.

While always a grave condition, the deadly nature of a twisted wandering spleen during pregnancy is graphically illustrated by the mortality of 41.7 per cent in twelve reported cases. In two, abortion occurred during the acute attack, one dying and one recovering. Twenty-eight cases have been reported who had malaria with more or less enlargement of the spleen from that cause. On the other hand, we have other conditions producing splenomegaly, such as Banti's disease, leukemia and hemolytic jaundice, in which there is no displacement of the organ.

Fully two-thirds of the reported cases have occurred in the second and third decades of life. In a fairly large number of cases violent physical exercise or some abdominal trauma preceded the acute attack. In many others there was no known cause for the acute torsion to occur at that particular time.

The symptoms may be either chronic, subacute or acute.

About two-thirds of the cases give a history of abdominal symptoms antedating the acute attack. This consists of mild attacks of abdominal pain due to partial torsion of the elongated pedicle, and digestive symptoms due to traction on the stomach and pressure on the intestines. Seven cases have been reported in which intestinal obstruction was associated with the twisted spleen. The symptoms of an acute attack offers the picture of a grave abdominal disaster, with nothing conclusive pointing to the spleen as a causative factor, unless the patient was known to have had a wandering spleen prior to the attack. There is violent epigastric pain with nausea and vomiting, rapid pulse and other symptoms of severe shock, and some elevation of temperature and leucocytosis. The abdomen is distended and extremely tender and rigid. The location of the spleen is limited only by the length of its pedicle. It may be anywhere in the abdomen. In a great many of the recorded cases the spleen has been located in the pelvis. In over 60 per cent of the female cases the organ was wedged between the bladder and the uterus, producing symptoms of bladder irritability and pelvic pressure.

Following splenectomy, there is a temporary fall in red blood cells, the leucocytes quickly return to normal, and there is a transient lymphocytosis. In only two cases have increased blood platelets been reported. In three or four months the blood picture usually returns to normal.

With very few exceptions a correct diagnosis has not been made prior to operation. In these rare cases the patient was known to have had a wandering spleen before the acute attack developed. The many pre-operative diagnoses have included twisted ovarian cyst, kinked hydronephrosis, peritonitis, intestinal obstruction, cysts of omentum and mesentery, perforated ulcer and perforative appendicitis. When a palpable tumor is present, Hartman, quoted by Sutton, has suggested that the patient be placed in Trendelenburg's position. If the tumor moves upward to the left costal margin, an ectopic spleen should be considered in making a diagnosis. Absence of attachment to pelvic organs, if demonstrated, would exclude ovarian cysts and fibroid tumors. Tumors of the kidney can usually be ruled out by the wide mobility of the tumor and the absence of urinary symptoms. When perforation of a hollow abdominal viscus is suspected, fluoroscopic examination, to demonstrate the presence or absence of gas bubbles beneath the diaphragm, will be helpful. When the aberrant spleen can be palpated through the rigid abdominal wall, one's fingers can usually be felt to glide over a distinct, firm edge or corner on the tumor. This will help to differentiate the condition from an inflammatory mass resulting from a perforated appendix. If a prolapsed spleen is known to be present, the tumor will be greatly enlarged, following acute torsion.

In nearly all of the reported cases the spleen has been removed. Bland-Sutton and Conklin have each reported a case in which simple detorsion and replacement of the organ was done. In both cases acute torsion recurred and splenectomy was subsequently performed. Five other cases have been treated by detorsion and replacement, with one death. In three cases splenopexy was done with no deaths. In two other cases exploration alone

was done, one with drainage and one without; one died and one recovered. In the cases treated by detorsion and replacement and by splenopexy, classed as recovered, no follow-up report was made regarding the ultimate fate of the displaced organ. In the light of the experience of a large number of surgeons, primary splenectomy seems to be the only rational treatment. The mortality in all the reported cases in which splenectomy was done has been estimated by Abell at 17.6 per cent.

The pathology is about what one would expect in a strangulated abdominal viscus. The first result of torsion is occlusion of the splenic vein with rapid engorgement of the organ. This is followed by obstruction of the artery with thrombosis and infarction of the spleen. There is an abundance of serous exudate poured into the peritoneal cavity. This fluid is, at first, clear, and later hemorrhagic or cloudy. As the process progresses, if not relieved by operative interference, the spleen finally becomes gangrenous and true septic peritonitis develops.

Among Americans, John E. Sutton, Jr., of New York, and Irvin Abell, of Louisville, have both written very comprehensive articles on this subject. Sutton reported the first case in a male subject in the United States. Abell's article was accompanied by very complete statistical tables. I have quoted freely from both of these authors.

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Johnston Memorial Clinic.

DISCUSSION

DR. FRANK S. JOHNS, Richmond: Dr. Motley has presented to us a very interesting case. His report of this rare condition, of which not more than a hundred cases have been recorded, is all the more interesting because Dr. Motley's case is perhaps the youngest reported case, at least in America, of a boy of eight years of age.

Because of the scarcity of this condition this subject will be hard to keep before us. It has been my opportunity to be associated with the service of about 50,000 patients entering the hospital and we have not seen a single case of wandering spleen.

In 1908, Dr. Johnston wrote authoritatively and interestingly on this subject, appearing before the Johns Hopkins Medical Society of Baltimore. At that time he had removed more of such spleens than had any other American surgeon, and it is interesting to note that in this paper Dr. Johnston called attention to a wandering spleen, emphasizing the very points that Dr. Motley has emphasized: namely, that in his opinion, few of them are congenital and that the scarcity of such cases made a diagnosis almost impossible. Few men will have the opportunity of seeing a case of this type in a lifetime, and for this reason there is little chance of properly diagnosing the condition before emergency exists.

Dr. Motley has stated that two of his cases who had their position corrected, that is untwisted and not removed, had to be operated on later; which confirmed his belief that all of them should be removed when recognized and not postponed.

About fifteen years ago the late Dr. Willis reported on rupture of the spleen. He discussed the blood picture—the cases of hemorrhage and those that had no hemorrhages—emphasizing the point that the blood picture on spleens removed without hemorrhage differed little from the blood picture of those that had hemorrhaged. Dr. Willis also considered secondary anemia an important factor and he stated definitely that some of these cases, even after successful removal of the spleen, probably died of secondary anemia.

Dr. Motley is to be congratulated upon calling our attention to this very interesting surgical condition. We shall be mindful of it, to the improvement of future diagnoses. As he has stated, probably not more than two or three per cent of such cases are correctly diagnosed, and those are the ones that were already known to have a spleen condition. It seems to me, therefore, that if we expect to make progress in the operative procedure, and to reduce the mortality of wandering spleens, which, of course, is now too high, we must realize that when recognized before becoming acute, the operative procedure is a simple one.

I wish to congratulate Dr. Motley on his successful case.

DR. JAMES HUNTER, Norfolk: I haven't seen any male spleens, but I operated on a spleen, with the assistance of the late Dr. Nash, when I just started my practice.

This lady—her husband was one of my father's old customers—came from North Carolina. She was in her thirties. She had strained herself supposedly while picking strawberries. I had Dr. Nash see her with me. He had no difficulty in diagnosing the case.

I wrote this case up, along with the result of the removal of the spleen, and it was published in the *American Journal of the Medical Sciences,* in 1905. Even though I wrote it in 1905, I wish everybody would get it and read it.

This particular spleen was removed. I don't know how many times it was twisted. It was removed with no particular trouble except that the adhesions had to be broken up.

A few months after this spleen was removed by Dr. Nash and myself, the late Dr. Robert L. Payne had a similar case which he removed in Norfolk, this being in 1904 or 1905.

The only other case I have ever seen was the case in Dr. Pratt's Clinic in Boston, at the Boston Dispensary,

at which I was asked to give an opinion. I had no trouble whatever in recognizing it, even though all of the other men disagreed with me.

I congratulate the Doctor. In my case it was a female.

DR. ARTHUR S. BRINKLEY, Richmond: Dr. Motley's paper recalls to my mind a case of Dr. J. Shelton Horsley's, with whom I was associated at the time—to be exact, it was in the fall of 1917. This patient came in with a diagnosis of a twisted pedicle of the spleen because she was known to have had a wandering spleen before.

This woman was admitted to the hospital in a rather marked stage of shock, with a large mass lying in her left lower pelvis, and, as I said, the diagnosis had been made. So we went ahead with the operation very promptly, and found that the blood supply had been practically cut off. It was three times its normal size and very much congested. The pedicle was easily accessible; it was doubly clamped, severed between the clamps ligated, and the spleen quickly removed. The patient had an uneventful recovery.

The interesting point about this patient was the fact that I was able to follow the case having subsequently operated on her brother and mother and I saw her on several occasions during this time, and, since I was interested in the case, would ask her how she was getting along.

She was in her twenties, and she subsequently married and gave birth to two or three children.

About five years ago, around twelve o'clock one night, I was called by her family physician to come to see this woman with him. He said he did not know what was wrong with her, but that she had an acute abdomen. I examined her and told him I thought she had a rupture of some abdominal viscus.

She gave a history of having eaten between six and seven o'clock an enormous meal consisting of corned beef and cabbage and a lot of dessert and I don't know what else. She was very much distended. I made a tentative diagnosis of a ruptured stomach, however, I wasn't sure.. I also thought there might be a possibility of a perforated ulcer of the duodenum.

She was removed to the hospital and her abdomen opened immediately and we found that she had a torsion of the stomach; in other words, it was completely twisted around itself. The circulation was completely cut off, and there was a hole in the cardiac end of the stomach that one could put both fists through. Her abdominal cavity was filled with corned beef and cabbage and other undigested food. We scooped it out the best we could and repaired the hole in the stomach, but she was in a desperate condition and died five hours later. There was evidence at this time of a general visceroptosis. This was a very unusual case and one that I was really able to follow over a period of several years.

I enjoyed hearing Dr. Motley's paper very much indeed.

DR. JAMES HUNTER: This spleen that we removed weighed a pound and a half, and it was undergoing a pretty good necrosis. It had a very thick capsule that had strong adhesions with the abdominal wall.

THE ROLE OF HORMONES IN THE CAUSE AND TREATMENT OF FUNCTIONAL UTERINE BLEEDING.*

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Washington, D. C.

That normal function of the female organs of generation depends upon the proper action of endocrine substances, has long been realized. Until from the secretions of several of the endocrine glands had been isolated some of their component hormones, the theories of glandular activity were largely speculative. Specific reactions were expected from highly complex bodies which we now know to be composed of several substances which may be mutually synergistic or antagonistic. The discovery of two or three active principles or hormones in each endocrine gland is undoubtedly only a promise of what will be found when these substances in turn are separated into their elements. At present, however, research in endocrinology has provided theories which are workable and methods of treatment which are to a marked degree successful.

For the completion of the normal menstrual cycle, four hormones must be present, must be properly balanced in quantity and must make their appearance in the proper sequence.

From the anterior lobe of the pituitary gland come the prolans A and B, sometimes known as Rho I and Rho II. Physiologists differ as to whether there are two distinct forms of prolan or one substance with two actions. The belief that there are two distinct elements is, however, more commonly accepted. Through the prolans, the an-

*Presented as part of a post graduate course in Female Endocrinology at the George Washington University School of Medicine during May, 1934.

terior pituitary is the stimulator or energizer of the ovary. The ovary produces two hormones, oestrin and progestin, which in turn act on the endometrium and uterine muscle.

The function of prolan A is to stimulate the growth, development and maturation of the primordial follicle up to and including the Graafian follicle stage. It is called the sex-stimulating hormone.

Prolan B does not become active until the Graafian follicle has been formed. When the follicle ruptures, it causes luteinization of theca cells, and is, therefore, known as the luteinizing hormone. Prolan B has a luteinizing action on the primordial cells, stops their development and thereby prevents the formation of more than the one Graafian follicle which is needed. Prolan B is antagonistic to prolan A at this point, but is synergistic in that by changing the theca into luetin cells, it completes the process of forming the corpus luteum.

The ovarian follicles, during their development, are forming in the follicular fluid a hormone formerly known as the "female sex hormone." This rather general term has been supplanted by the names folliculin or oestrin. The latter is more commonly used and will be employed in this paper. Oestrin causes pre-menstrual congestion, vascularization and hypertrophy of the endometrium. It also has the property of stimulating contractions of the uterine muscle.

With the rupture of the Graafian follicle, the lutein cells formed by prolan B constitute the corpus luteum. This structure continues to secrete a small amount of oestrin, but its principal function is the elaboration of the hormone progestin.

Progestin is antagonistic to prolan A in that it aids in inhibiting the development of primordial follicles. It is antagonistic to oestrin in that it checks the process of endometrial hypertrophy and prevents uterine contractions. A third property of progestin is the sensitization and preparation of the endometrium for the nidation of the ovum in case fertilization has occurred.

The presence of a fertilized ovum is necessary for the persistence of the corpus luteum. An unfertilized ovum is absorbed in three or four days. The consequent retrogressive changes in the corpus luteum stop the supply of progestin. The growth of the ovarian follicles has been stopped by prolan B and progestin, thus preventing the formation of oestrin. In the absence of oestrin there is no stimulation of endometrial hypertrophy, and as there is no longer a supply of progestin to maintain this condition, the endometrium degenerates and the hemorrhage of menstruation occurs.

Figure I shows diagramatically the actions, synergisms and antagonisms of the hormones concerned in the cycle of menstruation. The hormones of the posterior pituitary and the growth hormone of the anterior lobe are not concerned in this process and will be disregarded.

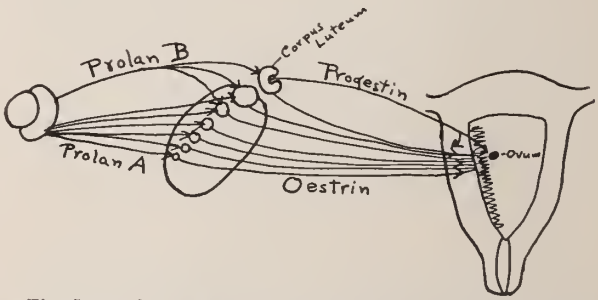

Fig. I.—Prolan A goes to the primordial follicles and stimulates development. Meanwhile the follicles are sending oestrin to the endometrium, causing hypertrophy. Prolan B stops follicular development at the Graafian follicle stage and luteinizes the theca cells. Progestin from corpus luteum maintains endometrial hypertrophy and prevents uterine contractions until the ovum is absorbed.

Figure II presents a diagram of the chronology of a twenty-eight day menstrual cycle.

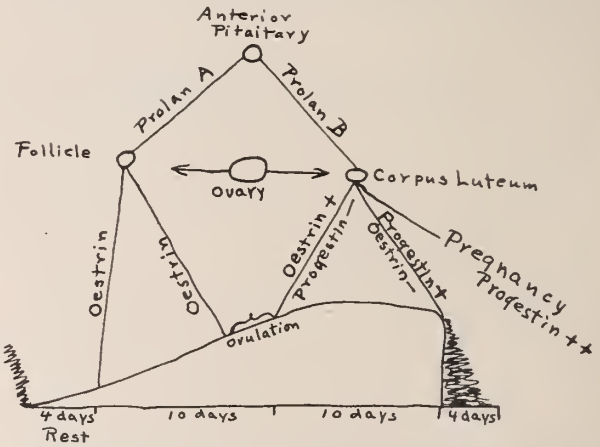

Fig. II.—After Mazer and Goldstein.—Four days of rest. Until ovulation occurs at about the 14th day, Prolan A is stimulating the follicles to produce large amounts of oestrin, which causes hypertrophy of the endometrium. After ovulation Prolan B stimulates the formation of the corpus luteum, the secretion from which contains oestrin and progestin. As the corpus luteum develops, it secretes less oestrin and more progestin until the latter dominates the action. When the ovum dies, progestin is no longer formed, oestrin has disappeared, the endometrial hypertrophy is neither stimulated nor maintained and menstruation recurs.

The clinical problem is the recognition of hormonal imbalance by signs, symptoms and laboratory tests, and the supplying of such substances as may be lacking.

The first general principle to recognize is that a hormone is only substitutive to its parent gland. It will not stimulate the gland which produces it. Prolan has no effect upon the anterior pituitary. When prolan insufficiency exists, however, artificial increase in the supply will stimulate follicular development in the ovary. Oestrin does not stimulate the follicles to increased production, but will cause hypertrophy of the endometrium. In order to achieve stimulation of an organ or gland it is necessary to supply the hormone secreted by the gland one step farther back in the chain. Hormonal deficiency may be temporarily remedied by supplying the hormone needed, but the action ceases when the hormone is withdrawn.

Excessive uterine bleeding may occur as menorrhagia, excessive flow at regular periods; metrostaxis, continued flow for weeks; epimenorrhagia, increased flow at shortened intervals; or metrorrhagia, flowing at irregular periods.

The etiology of the bleeding varies with the sexual age of the patient. The excessive flow at puberty is probably due to the fact that the pituitary gland has begun to function before the ovaries have become capable of forming corpora lutea. The follicles are stimulated by prolan A, oestrin is formed, the endometrium has become vascularized, but there is no progestin to stop the process. Some action of prolan B is evident in the finding of immature follicles in the ovaries. The process of development has been checked before luteinization could be accomplished. There is present a vital gap in the circle of hormonal balance.

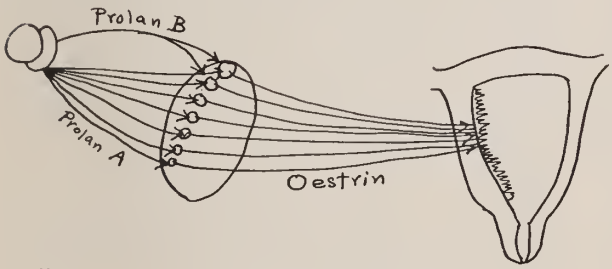

Fig. III.—The action of oestrin is unopposed, as there is no corpus luteum to form progestin.

This condition is not due to an excess of oestrin, as the blood test is usually negative; it is the lack of progestin by which the action of oestrin might be checked. In the comparatively few reports of operations in this type of case the common findings were endometrial hyperplasia, follicular cystosis and absence of corpora lutea.

In the hemorrhages of mature womanhood it is necessary to eliminate as causes the gross pelvic abnormalities, especially tumors, benign or malignant. In the bleeding which is definitely of functional origin it is customary to find follicle cysts, sometimes containing lutein cells; and abnormal corpora lutea, either cystic or otherwise deficient. Anspach and Hoffman found that in over one-half of these patients there was an endometrial hyperplasia. In 16 per cent the endometrium was atrophic, but they believe that the atrophy followed a previous hyperplasia. In 25 per cent the currettings showed the normal pre-menstrual endometrium. Further study of some of these patients showed that the cause of hemorrhage was some minor pelvic lesion which had been overlooked.

The structure of the endometrium is characteristic. Large vessels which are usually found only in the deepest layers become superficial. Rupture of these vessels increases the amount of bleeding. According to Schrode, small areas of necrosis cause open wounds as they slough, one after another, increasing the duration of the bleeding. The endometrial glands vary widely in size, large and small intermingled, to produce the "Swiss cheese" pattern of Novak.

Follicle cystosis, absence or abnormality of corpora lutea and hyperplasia of the endometrium are, therefore, the usual pathological findings in functional uterine bleeding of puberty and maturity.

At the time of the menopause the ovaries and uterus may show the same pathology as is found in the younger women. At this time of life, however, it is especially important to rule out the presence of polyps, myomata, fibrosis, and malignancy. At the menopause it is frequently found that the ovaries are fibrous as well as cystic and that the corpora lutea, when not absent, are atrophic.

Absence of the corpus luteum usually results in metrostaxis, while menorrhagia is a symptom of atrophic or subactive corpora lutea. Epimenorrhagia is due to premature rupture of the Graafian follicle and degeneration of the corpus luteum. This may be from over-stimulation of the follicle by prolan.

In all types of functional bleeding the amount of oestrin in the blood is usually normal. Prolan is practically always decreased in the blood in cases of hemorrhage of adolescent and mature women. In climacteric hemorrhage, however, it is not uncommon to find large amounts of the anterior pituitary

hormone. The amount of prolan varies inversely with the ovarian activity, and is particularly large when the menopause has been brought on by castration. All observers agree that whenever anterior pituitary hormone is found in the blood the prognosis is extremely poor.

In the treatment of functional bleeding during puberty and maturity, the object sought is the production of progestin. The bleeding is due to the excessive action of oestrin and may be controlled only by providing sufficient antagonism to that hormone. At present, progestin is not commercially available, and if it were, its action would be purely substitutive. Almost certainly would it control the hemorrhage, but it would be necessary to repeat the treatment with each period of bleeding. By stimulating the luteinization of the Graafian follicle and corpus luteum through the administration of the anterior pituitary hormone it is possible to produce sufficient progestin to stop a majority of the cases of functional uterine bleeding. The available preparations of prolan contain the follicle stimulating oestrin-producing hormone as well as the luteinizing principle, but prolan B is present in quantities sufficient to dominate the action.

Novak, Mazer and Goldstein and others feel that "the administration of the anterior pituitary sex hormone is almost a specific in the treatment of functional bleeding of puberty and maturity."

The amount of prolan obtainable from pituitary gland tissue is far too small for it to be therapeutically available. Large amounts, however, are to be found in the urine of pregnant women, and this is the source of the commercial preparations.

Among the standardized products of anterior pituitary sex hormone are:

Prolan powder, 100 rat units per c.c.

Follutein, 40-50 mouse units per c.c.

Antuitrin S, 100 rat units per c.c.

The powder deteriorates more quickly than the solutions; folluetin is in rather small dosage. Antuitrin S is probably the most practical of these solutions, as 100 R. U. daily is a moderate dose. No preparation of anterior pituitary has been effective when given orally.

Transfusion of the blood of pregnant women is a possible source of prolan, but is an impractical method of treatment, as it would be difficult to secure a sufficiently large supply.

While the standardized commercial preparations are most readily available, it is much more economical to employ the whole urine from pregnant women. Urine from patients known to be free from syphilis and tuberculosis may be sterilized in a Berkefeld filter and given intramuscularly in 20 c.c. doses. As the prolan content rises rapidly during the first five months and drops as quickly, the end of the fifth month is the time at which the largest amount of prolan is present. Oestrin, however, is also present, and at the fifth month the amount almost equals that of prolan. To secure the maximum amount of prolan with the least oestrin, urine from a patient in the second and third months should be utilized.

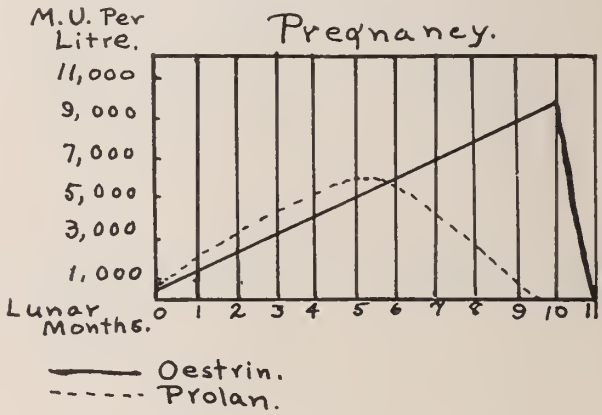

Fig. IV.—After Mazer and Goldstein.

Irradiation of the pituitary and ovaries is a method of treatment which gives much better clinical results than are to be expected from the theory of X-ray action. The roentgenologists believe that X-ray stimulation of tissue is impossble, that only destruction can be accomplished. It may be that the rays destroy inhibiting tissue, but the fact remains that low dosage irradiation of the pituitary gland is frequently followed by marked evidence of follicular activity. In cases of uterine bleeding due to fibrotic changes in the ovary, irradiation of the ovaries themselves is sometimes beneficial.

Oestrin, of course, is contra-indicated in treating the hemorrhages of puberty and maturity. The bleeding is the result of excessive or unopposed oestrin action.

The thyroid, while not primarily associated with sexual function, to some degree affects the action of all other endocrine glands. In cases such as those under discussion, it has been found that even though the basal metabolic rate may be normal, small doses of thyroid are usually beneficial. One-half grain of desiccated thyroid three times a day

seems to be sufficient to augment the effect of the special hormone being used.

In the treatment of menopausal hemorrhages, organotherapy is of very little value. The bleeding is due to the absence of corpora lutea or their inability to produce progestin in quantities sufficient to counteract the action of oestrin. When the blood is negative for prolan it is sometimes possible to accomplish some improvement by the substitutive use of corpus luteum, but when the anterior pituitary sex hormone is found in the blood, operation, radium or X-ray castration is the only method of treatment which promises any relief.

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FRACTIONAL STERILIZATION BY HEAT IN CORNEAL ULCERATION.*

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Fractional sterilization by heat in corneal ulceration has been successfully used for some years. Weekers, in 1910, reported a series of eleven cases, treated by using the red-hot cautery held, for from five to six minutes, close to the affected corneal area, but not in actual contact. Usually two or three applications at appropriate intervals were sufficient. Bourgeosis and Rozet employed the hot air douche; the stream of air, at a temperature of from sixty to seventy degrees Centigrade, forced against the involved section, was well borne and followed by improvement. In this country, Prince was the first to direct attention to the value of pasteurization, as he called it, and to develop a satisfactory technique. The lids being separated, a metal ball on the end of a rod, heated to about 160 degrees F., was held close to and moved slowly over the ulcer (but not allowed to touch it) for one minute, repeated three times at each seance. Good results were apparent after about the third day. In this section of the country it was first used by Dr. J. A. White.

Instruments, electrical and otherwise, including W. E. Shahan's thermophore, have been devised for this purpose, but none are more efficient than Prince's bulb, a metal, cone-shaped affair with a rounded base, attached to the end of a handle for the operator. It should be held in a hot flame, such as the Bunsen burner produces, until it reaches an almost white-heat. With the eyelids held apart by the index finger and the thumb of one hand, or by an assistant, the hot bulb, held by the other hand, should be brought to within from one-fourth to one-eighth of an inch of and moved slowly over the ulcer until the redness of the instrument produced by the heat disappears (from about thirty to forty seconds). This should be done two or three times at a sitting.

As to how often it should be used, depends on the case. In simple ulcer of the cornea from one to three seances are sufficient. The more severe forms, such as the serpiginous, the marginal, the infected and the deep, require daily applications until the healing process is definitely established, as indicated by the lessening of the inflammatory signs and

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the appearance of the beginning of regeneration of the destroyed tissue. Then it should be repeated from every second to every third or fourth day until the eye is quiet and the corneal surface has reformed. If uncertain, a drop of 2 per cent solution of fluorescein or of 1 or 2 per cent mercurochrome in distilled water, instilled in the eye, will reveal any break in the anterior layer.

The temperature at this distance from the metal bulb varies from 160 to 180 degrees F., high enough to kill or render much less active the bacteria, such as the pneumococcus, the staphylococcus aureus, the Koch-Weeks bacillus, bacillus pyocyaneus, the streptococcus and the gonococcus, which are usually the etiological factors in these cases. The congestion produced also promotes healing. While bacterial virulence is destroyed or much reduced by this method, other local and general measures are not to be over-looked and should be used when indicated.

Mydriatics (atropine as a rule) and miotics, if there is no contra-indication, should be employed as the necessity arises. If there be a purulent or muco-purulent exudate, a saturated boric acid solution or other suitable antiseptic collyria should be used. For the discomfort, which is very annoying at times, a .1 or 2 per cent solution of holocain or a one-half of 1 per cent aqueous preparation of pantocain is effective. As these two drugs have a very low toxicity, exert no influence upon the corneal epithelium and have no cycloplegic action, they can be used at any age at any time. Dionin is important because of its lymphagogue action. Mercurochrome, because of its germicidal properties, and White's ointment, possessing these qualities and also producing a soothing effect, are useful. Ethylhydrocuprein, properly used, is of value in pneumococcus ulceration. Hot, wet fomentations over the closed eyelids bring comfort and by producing congestion promote healing. Any foreign body imbedded in the cornea should be removed at the first visit. Local anesthesia preliminary to this removal or to applying the heat by Prince's bulb is amply and safely produced by the instillation of holocain or pantocain in the concentration mentioned above.

If destruction of the corneal substance has penetrated as deeply as Decemet's membrane, and there is any bulging forward of this structure, a paracentesis should be done and repeated often enough to prevent a return to normal tension until healing has advanced sufficiently to insure against the possibility of a rupture. This procedure does not interfere with the application of heat as outlined above.

Cauterization was not necessary in any instance in which the heat was applied, as early improvement was the rule, and the patients were spared the accompanying and subsequent discomfort occasioned by its application.

In those cases in which there is no purulent or muco-purulent secretion and in which there is considerable discomfort, a pressure bandage, properly applied, will protect the eye and add to the patient's comfort, as a rule, but a well-fitting eyeshade, such as Oppenheim's, that bulges forward at the center is to be preferred. It not only will protect the eye from atmospheric agents, such as the wind and the dust, but also from the annoying effects of artificial as well as natural light, and will allow access for medication.

Any condition affecting the patient's general physical well-being, whether it be a focus of infection at the root of a tooth or at the roots of teeth, in the tonsils, in the nasal accessory sinuses, in the appendix, in the gall-bladder, in the pelvis of the kidney or elsewhere, as well as diabetes, syphilis and tuberculosis should receive appropriate attention, so as to improve the subject's resistance, thereby aiding in recovery.

The cases listed below, selected from among many over a period of about ten years, include only the more serious types and are all in adults except two, one of which was gonorrheal in origin. They illustrate the uniformly good results obtained.

Case 1.—C. W., white, female, thirteen months old. This young child had contracted a gonorrheal ophthalmia through the carelessness of her colored nurse, who had a vaginal gonorrhea. She had been under treatment at her home in Petersburg, Va., but when she developed a corneal complication she was referred to our office. The trouble had existed for one week before she was seen on March 3, 1923. She had a purulent ophthalmia with central ulceration of the left cornea. There was also a gonorrheal conjunctivitis in the right eye. Dionin, argyrol, atropine and saturated boric acid irrigations were prescribed. Prince's red-hot bulb was used over the ulcerated area and over the everted palpebral conjunctiva daily, excepting the 6th, the 8th and the

14th, to and including March 15th. Improvement was apparent after the second day and was progressive. By the 15th both eyes were well and comfortable. Because of the opacity remaining in the left cornea, the dionin and the hot applications were continued, and she was seen at intervals varying from two to three weeks, until July 23, 1923. Gradual absorption of the scar resulted, and when she was seen again in April, 1926, only a very small opaque area, which was noticeable on close inspection, remained.

Case 2.—Mr. J. R. J., fifty-seven years old, a railroad engineer, was first seen on August 21, 1926. Two days prior to this time, while at work, a cinder flew into his right eye. The company's general practitioner removed the foreign body and gave him a solution of cocaine to use for the discomfort. The repeated use of the cocaine solution had stripped the cornea of practically all of its epithelium and there was infiltration of the anterior layers. There was a suppurative keratitis with a muco-purulent exudate. It is needless to state that his suffering was intense, "The eye feeling as if there were something sticking in it," was the way he expressed it. A smear showed the presence of staphylococci. The intra-ocular tension by tactile manipulation was normal. Warm boric acid irrigations, mercurochrome, holocain, atropine and hot fomentations were used. On August 26th, 5,000 units of diphtheria anti-toxin were given to him, with no beneficial effect resulting. It was necessary to give him morphine for the discomfort. On September 1st, I did a paracentesis of the cornea to prevent a rupture and to reduce the pressure against the posterior surface of the lids. This was repeated daily until the seventh. The heat was applied daily with Prince's bulb, except for the time that he was in the hospital (from September 1st to the 7th, inclusive), until September 30th, then for every two to four days up to the 29th of December, and from this time to the 19th of January, 1927, every four to ten days. On September 11th with a lessening of the congestion and the cornea beginning to clear at the limbus there were definite indications of decided improvement. Dionin was ordered at this time and was used alternate weeks for over a year to help absorb the rather dense cloud. The eye continued to improve and on the 19th of January, 1927, the vision was 15/200, a very gratifying change from the light perception only which he had at his first visit. He was seen again on October 20, 1927, at which time his vision had improved to 20/70. In January, 1935, when he came to consult about another trouble his vision in the right eye had improved to 20/40-. The corneal cloud remaining extended from the pupillary space downward, was about three or four m.m. wide, and had shown a gradual decrease in size and in density.

Case 3.—Mr. J. P., white, thirty-one years of age, water works employee, was seen on October 2, 1926. He had an extensive ulceration with dense infiltration of the adjacent tissue, involving about two-thirds of the right corneal surface. He had been under treatment for this condition in Petersburg, Va., and had been given 5,000 units of diphtheria antitoxin, but no apparent improvement had resulted. He was given 1 per cent holocain, atropine, mercurochrome, White's ointment, and later dionin, to use; told to make hot, wet applications, and to wear an eye-shade. Prince's bulb was used daily from the 2nd to the 9th, and every other day from this time to the 18th, by which date the inflammatory trouble had disappeared and the area had ephithelialized over. On the 25th he was seen again. At this time the eye was perfectly comfortable and the moderate scarring somewhat less dense. The dionin and hot applications were continued and he was seen about once a week until November 29th, when only a slight corneal cloud remained.

Case 4.—Miss M. W., white, sixteen years of age, student, was first seen on June 3, 1927. She had ulceration of the right cornea near the limbus at about from seven to nine o'clock, and blepharitis. Atropine, mercurochrome, White's ointment and hot fomentations were ordered. Prince's bulb was used every third day until July 6th, and then at five-day intervals for two more applications. Improvement was apparent after the second visit. By the 28th she was comfortable, and the yellow oxide of mercury ointment was prescribed for the blepharitis. She was discharged as cured on July 19th, at which time she had a small macula at the site of the ulceration.

Case 5.—Mr. C. E. L., white, fifty-nine years of age, railroad employee, while on duty on August 21, 1927, a foreign body flew into his right eye. It had been troubling him since that time. He was first seen on September 1st. A foreign body was removed from an infected, deeply ulcerated area

in the right cornea. The tension was normal. Atropine was instilled, and mercurochrome, White's ointment and hot applications were ordered. Prince's bulb was used on September 1st, 2nd, 3rd, 5th, 6th, and 8th. By the 8th he was well and was discharged.

Case 6.—Mr. W. G. A., white, thirty-five years old, police officer, came on February 1, 1928, to see about his right eye which had been troubling him for about two weeks. He had a corneal ulceration of the indolent type, with a smooth, depressed area, no congestion, very slight infiltration, no lachrymation and very little photophobia, but occasionally the feeling of a foreign body in the eye. Dionin, yellow oxide of mercury ointment, 1 per cent, and hot applications were ordered. Prince's bulb was used on the 1st, 3rd, 7th, 10th, 17th, and the 27th. By March 8th, when he was last seen, the facet had disappeared and the eye was normal in appearance and perfectly comfortable.

Case 7.—Miss J. W., white, forty-five years of age, school teacher, came on February 8, 1928, complaining that her left eye was inflamed and uncomfortable. Two days previously a friend had removed a foreign body from the eye. She had a well-developed infected ulcer below the center of the cornea. The iris was not involved. Mercurochrome and White's ointment were prescribed and Prince's bulb was used daily for four days and then on the 13th and the 15th, when she was discharged as cured.

Case 8.—Mr. A. J., white, sixty-three, county employee, walked into a young tree on April 23, 1928, a twig of which struck him in his right eye. He was first seen on April 25th, with an infected ulcer and a complicating iritis of the right eye. He was given mercurochrome, atropine, White's ointment, holocain, and advised to use hot fomentations and to wear a suitable eye-shade. Prince's bulb was employed daily for four days and then every other day until May 14th. It was repeated on the 18th and the 28th. Improvement, manifest after the second visit, continued progressively until he was discharged on the 28th with the ulcer healed, the eye quiet and comfortable, and a small corneal macula remaining.

Case 9.—Mr. W. R. B., white, age twenty-five, railroad employee. On June 24, 1928, a foreign body became imbedded in his left cornea. Four days later he came to the office with an infected ulcer near the lower corneal border. The iris was free and normal in appearance. Dionin, mercurochrome, White's ointment and hot applications were prescribed. Prince's bulb was used daily for eight days, and then every other day until July 12th, and repeated on the 17th. He was more comfortable on the third day and continued to become more so until the involved area had recovered completely. On the 17th he was well, but, because of the slight scar remaining, made an occasional visit until August 10th, at which time the cornea was normal in appearance.

Case 10.—Mr. S. W. M., white, forty-three years of age, accountant, was first seen on January 21, 1929. His left eye had been troubling him for over two weeks, during which time he had been unsuccessful in securing relief. The ulcerated area, about four m.m. in diameter, extended from the center of the cornea upward and outward. He was given dionin, White's ointment, and holocain to use at home, and also advised to make hot applications over the closed eyelids. The intraocular tension was normal and he had a complicating iritis. Atropine was instilled often enough to keep the pupil well dilated. Prince's bulb was used daily until February 2nd, then every other day until February 17th, and about once a week from that date until the end of March. The inflammatory trouble began to subside early and continued to do so until, by February 17th, the eye was quiet and comfortable. A moderately dense scar remained. The dionin and hot applications were continued, and when he was last seen, in June, 1931, there was only a very small, thin corneal cloud above and to the outer side of the pupil.

Case 11.—Mr. C. C. M., Jr., white, twenty-seven years of age, railroad clerk, consulted me on March 2, 1929. His left eye had been troubling him for about two months. During this time, although he had been under treatment, he had apparently become worse. He had a vascular keratitis with destruction of nearly all of the corneal epithelium, and a complicating iritis—a very irritable and an extremely uncomfortable eye. Dionin, atropine, White's ointment, and hot, wet fomentations were ordered. Prince's bulb was used at intervals of three and four days until June 5th, after which it was applied once weekly until July 21st. Improve-

ment, which was manifest after the first two visits, continued, and by June 5th he was comfortable, except when in a very bright light there was some photophobia. There was an evenly distributed cloud throughout the whole corneal surface. On July 21st there was no photophobia and the opacity was much thinner. In May, 1934, he consulted me about a traumatic conjunctivitis. At this time the cornea appeared normal, but with the corneal microscope or a plus twenty D. lens in the ophthalmoscope the vessel remains could be seen.

Case 12.—Mr. S. L., white, thirty-seven, merchant, an old trachoma case with the usual relapsing corneal involvement from time to time, appeared at the office on January 24, 1931, with ulceration of the upper-third of his left cornea. He had a complicating iritis. Dionin, atropine, White's ointment, holocain, and hot applications were ordered. Prince's bulb was used daily until January 30th, every other day until February 7th, and every three to six days from this time to February 28th. The last application was on March 14th. The eye was considerably better after the fourth visit, and continued to progressively improve. By February 28th it had healed, leaving an opacity. He was advised to continue the dionin and the hot fomentations. In March, 1932, when he came to consult about a stricture of the left lachrymal duct, the cornea was clear.

Case 13.—Mrs. W. E. D., white, twenty-eight, came to the office on April 25, 1931. Both eyes had been giving her trouble for about one year. She had been under the care of different ophthalmologists from time to time without any noticeable improvement. Her trouble was a vascular keratitis with a destruction of the epithelium over a considerable portion of each cornea, the right one being the worse Both eyes were very irritable, with marked photophobia and lachrymation. Dionin, White's ointment, atropine, and hot applications were ordered. Prince's bulb was applied every three to four days until May 16th, and then at intervals of from one to over two weeks until July 18th, at which time she was discharged, both eyes having fully recovered.

Case 14.—A. M. H., colored, female, thirty-seven, married, came to the office on February 22, 1932, referred by her cousin. She had been under the care of two very competent and well-known ophthalmologists, who, because of the apparently hopeless condition of her left eye, had advised her to have the eye enucleated. Her trouble was a marginal ulceration, extending from about two o'clock around to about nine, with two narrow bridges of healthy corneal tissue at about four and seven o'clock. Decemet's membrane was exposed throughout nearly the whole of the involved area, and the prognosis appeared grave. There was a moderate infiltration of the adjacent corneal tissue. After proper preparation a paracentesis was done, and repeated daily to keep the intraocular tension below normal until healing had advanced sufficiently to prevent a rupture. Mercurochrome and White's ointment were applied every day. Recovery began within a few days and continued, so that on February 29th the lowering of the intraocular tension was no longer necessary; and on March 16th, after receiving daily applications of heat by means of Prince's bulb, she was so much improved that she was allowed to return to her home, sixty miles from Richmond. On March 23rd she was seen for the last time, and the eye had completely recovered, was comfortable, and was normal in appearance.

Case 15.—Mr. R. D. W., white, fifty-two years of age, merchant, was first seen on March 12, 1934. For several days his left eye had been running water, was sensitive to light, and at times felt as if it had something in it. The ulcer, about one-quarter of an inch in diameter, at the nasal side of the cornea near the limbus, was of the infected type, with infiltration of the adjacent tissue, and had penetrated the superficial layers. Prince's bulb was used every day or two until the 26th. Recovery began early and continued so that on the 26th, when he was discharged, only a very small and thin opacity remained.

Case 16.—Mr. B. A. H., white, sixty-two, married, city employee, came to the office on March 22, 1934, with an infected ulcer about three-sixteenths of an inch in diameter, involving the center of his left cornea. This eye was aphakic. Dionin, White's ointment, atropine and hot applications were prescribed. Prince's bulb was used daily until the 24th, from this date to April 11th it was used every other day, and then every six days until the 28th. He was more comfortable after the second visit, and continued to rapid recovery. On the 28th only a thin corneal cloud remained, and the eye was well and comfortable.

The above series of cases clearly demonstrates

that fractional sterilization by using Prince's bulb or other similar apparatus, properly applied, is a safe procedure; that it is non-destructive to the corneal tissue; that it obviates the necessity for cauterization; that it kills or lowers bacterial activity so that their destructive influences soon cease and the process of repair appears; that in some instances, apparently hopelessly appearing eyes may be saved when it is combined with other indicated procedures; and that it produces highly successful and gratifying results.

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PATHOLOGICAL LESIONS CORRECTLY DIAGNOSED BY ROENTGENOLOGIC METHODS AND LATER MISSED AT SURGICAL EXPLORATION.*

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Roentgenology is the latest branch of medical diagnosis. Although the roentgen ray has been used in determining the cause, nature, and extent of disease for over a third of a century, its full possibilities are still too little appreciated by the profession as a whole. This is particularly true of those physicians not in group practice or connected with a hospital or a clinic. The family physicians and practitioners of general medicine often do not know either the roentgenologic ability or the limitation of the radiologist. This is partly the fault of the medical school in not teaching the student more about this latest branch of medicine. Often the head of the department of radiology is some young energetic man, thoroughly trained in his field, but lacking the grey hairs and the professorial look of the other members of the faculty, and, therefore, not given the rank that he deserves nor the opportunity to present his subject to the extent that it is being used in the better hospitals and clinics. Undoubtedly, in some medical schools this is due to jealousy of the older members of the faculty toward a field that has made such immense strides in the last dozen years.

Some medical schools still have no regular course of instruction in radiology, and in many others the subject is a minor elective. Unless the present young graduate secures an internship in a rather large hospital, or in a hospital with an attending staff of leaders in medicine, he may start his own office with a very inadequate knowledge of the help he can secure in his practice from a competent radiologist.

Anyone reading the title of this discussion might think that the writer has a fight with the surgeon To the contrary, he has the greatest admiration and respect for the surgeon, but he is not completely in sympathy with the incompetent type of surgeon. Radiologists and surgeons both make their mistakes and, when both are competent, each is sympathetic with the other. Each can learn from the other, but it is difficult for the untrained surgeon to take advice, particularly from the "X-ray man" as he is considered. The best surgeons are always associated with competent roentgenologists, and are learning the value of their ability, particularly in recent years, in roentgenoscopic examination.

A hypothetical case might be mentioned. The roentgenologist will make a diagnosis of an ulcer of the duodenum in a patient with indefinite digestive symptoms. It is decided to explore the abdomen, surgically. The surgeon examines the peritoneal surface of the duodenum, only about one-half to two-thirds of its circumference, and decides that his organ is normal, then does a cholecystectomy or some other necessary or unnecessary procedure, and tells the referring physician or the medical division that the patient did not have a duodenal ulcer. Had he opened and inspected the mucosa of the duodenum, he probably would have been surprised. Judd will not say that the diagnostic and radiologic sections in their clinic are wrong in ulcers of the stomach and of the duodenum until after he has opened the viscus and inspected the mucosa. Peptic ulcers frequently cause no pathologic change other than a soft complete erosion

*Read at the sixty-fifth annual meeting of the Medical Society of Virginia in Alexandria, October 9-11, 1934.

of the mucosa. Ulcers of the duodenum are almost universally on the anterior or posterior walls of the organ, and there is more than a 50 per cent chance of the operator not finding the lesion by palpation when it is on the posterior wall.

A few years ago, while reviewing some case histories in a large diagnostic clinic, the writer saw a diagnosis of carcinoma of the stomach, made by the radiologic department, and that the lesion was operable. This case was explored by a surgeon of international reputation, and he described a large prepyloric mass, deciding that the condition was all inflammatory, and did a large posterior gastro-enterostomy. Three months later the patient returned for a re-examination and check up, but was in much worse general health. The roentgenologic report then was, carcinoma of the stomach, inoperable, and the patient died two months later of his malignant condition. If a surgeon of such experience could be mistaken, what right has the average operator in making a diagnosis of vital importance contrary to the roentgenologist by abdominal incision, inspection, and palpation. Immediate biopsy by frozen section, while the surgeon waits, is the correct procedure. Only by the above described procedures will the present competent radiologist admit that he is wrong. Occasionally, then, time will show that the pathologist was mistaken.

It is difficult to secure post-mortem examinations except in well-organized clinics and hospitals. For that reason it is difficult to secure proof of an incorrect surgical, exploratory diagnosis. Many internists are aware of the number of post-operative cases that continue with the same symptoms and difficulties. The surgeon may say that the condition is functional, and the roentgenologist may say it is organic, while the family physician is left to worry with a miserable patient.

Case 1.—A male, age 57, was admitted to the hospital complaining of indigestion, pain, nausea, and some intermittent vomiting. Roentgenoscopic examination showed a large perforating gastric ulcer in the middle of the lesser curvature of the stomach. Ten days later the patient was again examined, and the ulcer was plainly and definitely seen on the fluoroscopic screen and on a series of films. The ulcer crater was demonstrated to the X-ray technician and some medical students in the dark room. A few days later the patient was operated on by two very competent surgeons, in the surgical clinic before the senior class of the medical school. Somewhat to the radiologist's embarrassment, no ulcer could be found, and the stomach was demonstrated to the students as normal. The patient did not improve, and a few weeks later, because of a cough, the chest was examined, roentgenologically, and a definite diagnosis of moderately advanced pulmonary tuberculosis with cavitation was made. The clinicians doubted this, but a short time later tubercle bacilli were found in the sputum. The patient died, and a complete autopsy was done. There was a large perforating gastric ulcer, about 3 cm. long and 1.5 cm. in diameter on the lesser curvature of the stomach and into the liver. It had been missed because it was in between the two folds of peritoneum lining each side of the gastro-hepatic omentum. The patient had advanced bi-lateral pulmonary tuberculosis with cavitation.

Case 2.—A male, age 54, had had chronic digestive disturbances for several months with marked vomiting. A roentgenologic examination was done, and a diagnosis made of ulcerating carcinoma of the stomach with considerable gastric obstruction. Abdominal exploration was done. There was a large mass obstructing the pylorus and many enlarged glands in this area. A posterior gastro-enterostomy was done to relieve the obstruction and glands were removed for biopsy. The glands were reported by the pathologist to be inflammatory with no evidence of malignancy. The posterior gastro-enterostomy functioned very poorly, and vomiting continued. The writer re-examined the patient, roentgenologically, and gave the same written opinion, ulcerating malignancy at the pylorous, with gastric obstruction. Another surgeon went in and enlarged the gastro-enterostomy, and would not agree that the patient had a cancer of the stomach. Vomiting continued, roentgenoscopic examination showed the posterior gastro-enterostomy still to be non-functioning, and the patient was again operated on. The surgeon would not agree that there was a malignancy and did an anterior gastro-enterostomy. The patient died, and autopsy by the pathologist showed a small carcinoma in the pyloric ring. This case was handled by the best surgeons in Washington, and they are not to be criticised, except their lack of faith in a roentgenologic diagnosis.

Case 3.—A male, age 46, had pain and nausea,

with persistent vomiting. Roentgenologic examination showed almost complete obstruction of the first portion of the duodenum, due to an old duodenal ulcer. There was marked dilatation of the stomach. At the same time, a definite crater, about the size of a small coin, was seen on the posterior wall of the stomach, slightly closer to the lesser curvature. This ulcer was demonstrated in the dark room to several visitors, and was seen in the fluoroscopic screen and in a number of films in different positions, over a period of twenty-four hours. The patient was operated on, and the obstruction and an old duodenal ulcer were found. The surgeon could not find any gastric ulcer. He did a large posterior gastro-enterostomy. The patient left the hospital improved, and he has been lost track of. This very prominent and competent surgeon said that he could not find the gastric ulcer, but freely admitted that this was no reason that the ulcer did not exist. The presence or absence of the gastric ulcer did not change the type of operation nor the post-operative treatment, except to watch further to see that the gastric ulcer was not an ulcerating malignancy. We are now trying to trace the patient.

CONCLUSIONS

The above discussion has limited itself to the gastro-intestinal tract, but the same feeling applies equally as well to other organs, such as the kidneys, the uterus, or the gall bladder. Last month the writer read a paper before the American Roentgen Ray Society on the roentgenologic diagnosis of gall bladder tumors. In none of the cases reported could the surgeon have made the diagnosis until after the gall bladder had been removed and the mucosa actually inspected. Too frequently, in the past, after a surgical exploration, the operator has made the statement that a condition, diagnosed by the radiologist, did not exist, later to find, sometimes at autopsy, that he was wrong.

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DISCUSSION

DR. WRIGHT CLARKSON, Petersburg: Dr. Moore's work in the field of roentgenology is quite outstanding, and I think we should carefully consider the facts he has presented to us, realizing, of course, that those of us making regular roentgen examinations make mistakes as well as the surgeons. In fact, the greatest lesson to be learned from this valuable paper is that radiologists, surgeons, pathologists, and all of us, make mistakes, and we should carefully and regularly consult with each other with a hope of ascertaining the facts in every case, as far as practicable.

SOME PROBLEMS OF THE INDUSTRIAL PHYSICIAN.*

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Waynesboro, Va.

In presenting this paper I am aware of the fact that there is nothing new or scientific in its contents. In industrial work, as compared to medicine and surgery in general, the physician frequently is not dealing with those frankly sick. The physical examination conducted in industrial work is intended to determine for what type of work the given individual is best suited; in other words, to prevent getting square pegs into round holes. The individuals to be examined are either well or think they are well, or are trying to make the examiner believe they are in perfect health, whereas, the individual who consults his doctor is either sick or thinks he is. It is really astonishing at times to see the gross and evident pathology in people who claim to be in perfect health, never having lost a day from sickness and never having consulted a physician. Believing that some of our experiences might prove to be of interest, a brief summary of some of the things encountered in industrial work will be set forth.

Probably the most notable single condition, and one to me very puzzling, is the incidence of circulatory hypertension in young individuals who present no other demonstrable findings or symptoms. These cases are common and upon repeated examination will show blood pressure ranging from 160 to 190 systolic and from 90 to 100 diastolic, with rapid pulse rates usually. This occurs in both male and female applicants, ranging in age from eighteen

*Address of President, before the Augusta County Medical Association.

to twenty-two. Sometimes this causes one to wonder what the explanation of these conditions can be. In most of these cases Wassermann and Kahn tests show negative, thus eliminating syphilis as the underlying cause. Urinalysis reveals no trouble in the kidney, and history of occupation, past health, etc., throw no light on the cause. After careful reading of all literature to which access could be had on the subject, just one article setting forth a similar experience could be found. This appeared in the *Journal of the American Medical Association,* in an abstract of an article written by a physician in Berlin, whose work consisted mostly of the examination of college students. He had encountered a similar condition and was wondering whether these findings indicated that we had set our normal blood pressures in too narrow a limit or whether these cases were forerunners of frank cardiac pathology in the next decade of life.

Of course, there are the usual number of cases of moderate hypertension in young individuals in which diseased tonsils, diseased teeth, or similar foci, can be blamed for the findings in the circulatory system, and quite a number of these have been cleared up by having these foci corrected.

Slightly different from the foregoing subject was an interesting experience with three members of one family. The first, a male twenty years of age, was noticed to have cold hands, very marked tremor of his fingers, a blood pressure of 160 systolic, 90 diastolic, a pulse rate of 120 to 150. The enlargement of his thyroid was so slight as to be questionable. There was some prominence of the eyeballs, violent, heaving heart action, no murmur, slight cardiac enlargement, very bad tonsils and very bad teeth. He was diagnosed as exophthalmic goitre and was referred to his family physician who confirmed the diagnosis and advised him to go to a hospital, which he did. He was kept in the hospital about a week and his tonsils removed. He was then advised to have his teeth corrected with the assurance that he had no exophthalmic goitre and that he would soon be all right. At this time his basal metabolism was negative. He did not improve in spite of the fact that the foci of infection had been removed, and later he consulted another physician who was inclined to think it a case of effort syndrome. But with rest he still did not improve and returned to the doctor who had a basal metabolism made, which then showed plus. He was seen by a surgeon who removed his goitre, but two years later he still showed a blood pressure of 200 systolic and 90 diastolic, still had marked tremor and very rapid pulse rate. The second case was an older brother, twenty-five years of age, who passed a normal physical examination in 1930, except for chronic disease of the tonsils and bad teeth. In October, 1931, this young man had a streptococcic infection of the throat and was quite ill. When the acute illness had subsided, the tonsils were removed, following which the thyroid became enlarged. He developed marked tremor of his hands, very rapid pulse with marked irregularity, a blood pressure of 170 systolic, 90 diastolic, and, though examined repeatedly, was never even approximately normal again upon examination. The third member of the family was a girl nineteen years of age, who exhibited the same train of findings.

Another case not related in any way to the foregoing was that of a young man of twenty-two, who, at the time of examination, was frankly somewhat under the influence of alcohol. His general appearance was that of vigorous health. He needed some dental treatment; the heart appeared normal in size, although his pulse rate was 100 at rest, while blood pressure was 120 systolic, over 80 diastolic. There were no murmurs, but there was a duplication of the first sound at the apex and marked irregularity of heart action. He was told he would be re-examined at some future time when he was free of alcohol, as in his present condition we could not know how much of his heart findings could be blamed on the alcohol, but that there was certainly something wrong with his heart. He considered this quite a joke and left. The next report some three months later was that he had some acute infection and died within a week.

One of the most perplexing questions with which industrial physicians have to deal is hernia, which, like the spirocheta pallida, is abroad in the land. It is surprising the number of men who show hernia and apparently have no knowledge whatever of any abnormality until it is discovered upon a general examination. It is by no means easy to be certain of the diagnosis of hernia, particularly the incomplete hernia, though it would appear to be a simple thing. Most of the men who are told they have hernia are very much astonished and the usual answer is "it ain't never bothered me none." Femoral hernia

exists in the male probably more frequently than many of us realize, some ten or twelve cases having been observed.

Personally, I doubt if an oblique inguinal hernia ever occurs as a result of trauma in a normal man, unless the trauma would be some tremendous pressure. There are frequently seen cases in which the individuals have had hernia in childhood with an apparent spontaneous cure—to such an extent that no abnormality of the structures could be demonstrated. Sooner or later many of these recur without history of trauma of any kind. Many of these individuals who had hernia in childhood are not aware of the fact, hence present no history. Should one of these recur following trauma or a straining effort of some kind, what is more natural than the belief that the hernia has just been caused as a result of this trauma? One case in particular will illustrate this point. A young man who passed a normal physical examination was at work and, in attempting to lift an object, had a sensation as of "something giving way." He reported at once with a small complete hernia. When he was placed in a reclining position, the hernia disappeared and the rings appeared perfectly normal, but immediately upon resuming the standing position, the hernia would reappear. He was referred to a surgeon who thought the hernia had been produced that day, but upon operation discovered the hernial sac which indicated that the hernia had existed previously.

As to the difficulties encountered in the diagnosis of hernia, a case or two will illustrate. The first is that of a young man eighteen years of age. In 1930, he was found to have a left inguinal incomplete hernia. He at once consulted a surgeon in another city, a very capable man, with the idea of having an operation, but the surgeon assured him that there was nothing wrong with him. This young man passed a physical examination at the hands of another physician for the C. M. T. C. and reported to camp where the existence of the hernia was discovered by the camp examiner. He afterwards worked in a railroad freight station trucking freight and he had no trouble. Later he worked in a restaurant and, in waiting on a customer, turned to put a cup of coffee on the counter and the hernia became complete, whereupon he consulted another surgeon who operated and corrected the condition.

Another case is that of a soldier who requested an examination, saying that he believed he had a hernia. This was early in the morning, and a careful examination revealed firm rings, no enlargement and no sign of hernia. There was no bulging in the canal. He went on a march with his company and some three hours later presented himself with the request that he be re-examined, which was done. A complete hernia, the size of a hen egg, was very painfully apparent to the examiner who so recently had assured the man there was nothing wrong with him. He was requested to present himself early the next morning, and again would have been assured that he was perfectly normal, except for the fact that the examiner had seen the hernia on the preceding day.

Just recently a steel worker, whose employer was doing some work in Waynesboro, was brought in by his foreman one morning with the request that he be examined for hernia. This man had been recently examined by his employer's physician and passed as normal. On being questioned, he said that during the day there was a small lump which was not present when he arose in the morning, which led him to believe that he might have a hernia. There was no pain, and no history of trauma in this case. He was examined and found to have relaxed rings and apparently a very small incomplete hernia. He was requested to return in four hours for a re-examination, which he did. At this time a small complete hernia was very evident.

Another case which illustrates the difficulty in making the proper diagnosis in these cases was one in which a man working for a road force was told he had a hernia. He went to his employer and reported it. The employer sent him to a doctor who handled his insurance company's work and who could find no hernia, but referred the man to a surgeon. Later, this case had a hearing before the Industrial Commission and the three physicians were present, two of them testifying that the man had a hernia and the third testifying that he could not find one.

What advice should be given a man who is found to have a small incomplete hernia or a marked liability to hernia? Should these cases be operated upon at this stage? It is a well-known fact that many of these men live for years doing heavy work and never suffer any aggravation of their condition. It is also a fact that some of these individuals while engaged in doing something they have done thousands of times before have produced complete hernia,

sometimes with strangulation. Just how we may be able to determine the course any given case will pursue is a little beyond me.

The question of syphilis is rapidly becoming one of extreme importance to the industrial physician. Many employers at present make routine Wassermann and Kahn tests on every employee, regardless of history or physical findings. Cases showing positive reports are usually required to obtain treatment at the hands of a physician of their own choice. It is a striking fact that many cases showing 4 plus reactions with a definite history of initial lesion show no secondaries whatever though many of these cases have been untreated. Specimens of blood sent to other laboratories have confirmed the diagnosis of the blood tests. This does not take into any account the 1, 2 and 3 plus reactions, but deals only with 4 plus. In many cases no history whatever of infection can be obtained though confronted with a strongly positive blood report and confirmed by a similar report at the hands of their own physician. There have been several cases in which a man shows a 4 plus Wassermann and his wife a persistently negative blood report, although in some of these cases there have been several children in the family. All of these yielded to treatment and the man's blood gradually returned to negative under proper treatment.

The incidence of positive reactions in these cases who consult their family physicians for advice necessarily will be much greater than among those in whom blood tests have been made routinely, because the man who goes to his doctor for advice or treatment must show some symptoms, whereas the routine examination of the blood obtains specimens from a very large percentage of individuals who have had no symptoms whatever and no reason to suspect they had any trouble. What is the percentage of positive Wassermann or Kahn reactions among the whole population? Our experiences would seem to indicate that it is less than 4 per cent, though construction forces and other more or less nomadic individuals will show a higher percentage than the more stationary groups of individuals.

Should routine Wassermann or Kahn tests be a part of every physical examination? It is well known to all of us that this condition will lie quiescent for years and then, following some injury or non-related disease, will flare into activity, causing very serious complications to the accident or disease for which the patient seeks treatment, or later to manifest itself in the well-known and distressing manifestations of syphilis in the nervous system, meantime having been passed on as a heritage to succeeding generations. That these cases should be directly and vigorously treated until we have assured ourselves as far as it is humanly possible to do so that they are cleared of all infection seems to be a very urgent need at the present time. Following this infection, insanity and other conditions which cause its victims to become public charges are well known, and it is also well known that, at the present rate of increase of these unfortunates becoming public charges, the time is plainly in sight when their care will be a grievous burden upon the rest of the population.

The present era seems to be one of rackets and racketeers. Rapidly assuming its place as one of the leading rackets of the many with which we have to contend is silicosis. One firm of contractors in a neighboring state recently had suits on its hands totalling several millions of dollars from this one condition alone. As is well known, this is a condition which is extremely hard to prove or disprove. For instance, a man might work at some trade in which silicosis could be contracted for years without manifesting any symptoms, as many of these cases do. Should he, however, change jobs and for any reason decide, after working a short while, that he could collect damages and retire, his last employer, in all likelihood, would have to pay the freight if the man had been engaged in any work where silicosis might be acquired, even though his service with this employer was of short duration and it is a well-known fact that silicosis is usually acquired over a number of years. The diagnosis of silicosis has been made in an individual who had never at any time been exposed to any condition wherein he might have acquired silicosis, and who was in robust health except for a few weeks in which he had a low-grade influenza. The absurdity of this diagnosis was so manifest that the patient himself scoffed at the idea that he could have any such condition, careful questioning of his life's history proving that he had never been exposed to any such condition. This man, three years later, is still going about his daily work, his general condition unchanged, and the only complaint he has had during that time was a strain of his back in an attempt to keep some heavy farm machinery from turning over, wherein most of the

weight of the machinery was thrown upon him. In some sections of the country this silicosis racket has assumed such proportion as to throw a tremendous burden upon employers and insurance companies.

Physical examinations periodically of all employees and advice as to correction of defects noted make up an important part of industrial medicine. These cases are referred to the individual's own physician for treatment. In spite of preliminary examination, people will at times be put on jobs for which they prove unsuited and have to be changed to work to which they are suited. The doctor who is doing industrial work unavoidably becomes linked up with safety and accident prevention, which is as it should be, in our opinion, though a great many physicians do not agree with this. Why should accident prevention be any less important to the physician or to the patient than preventive medicine in infectious disease? The vast majority of accidents are preventable. This is clearly shown by the fact that at least five times as many injuries occur outside of industrial plants and operations as occur in them. According to the National Safety Council, far more injuries and deaths result annually from accidents in the home than in all of the factories, mines, shops, etc.

There is a widespread idea that the work of the industrial physician is largely taking care of accidental injuries, but this is really a minor part of his work, the vast majority of such cases being taken care of by nurses. People in industries present the same diseases and conditions not related to their work that all of us see. And here might we mention experience with sick people who have been discharged from treatment and return to work? It is almost a daily occurrence for people to report for work following a rather minor illness in such a condition they could not possibly work. This particularly applies to influenza cases who have been dicharged from treatment for several days, and return, wanting to work. A very large number of these people, even several days after apparent recovery, show subnormal temperature, and marked evidence of cardiac distress.

A few years ago an article appeared in the *Journal A. M. A.*, which described a series of such cases, who apparently had recovered and had returned to work only to fail and be under observation for weeks as a consequence. These cases are seen by the industrial physician after the attending physician has left off observation, and our experience leads us to believe that a great many of these people return to work too soon with permanent damage resulting. It is, of course, necessary that people be returned to their jobs as soon as possible, but it is an easy matter to gain a day and lose weeks if they return too soon.

CONVALESCENT SERUM IN THE TREATMENT OF UNDULANT FEVER—CASE REPORT.*

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Raphine, Va.

Perhaps before going into the case history it would not be amiss to give a brief resumé of the disease.

As you will recall, it is a specific infectious disease caused by the bacillus melitensis or abortus (caprine, bovine, porine). The disease is found to attack goats, cattle and hogs principally, although other animals are susceptible to it.

The disease seems to be principally transmitted through the use of contaminated milk or milk by-products, or through the handling of contaminated or diseased animals and meats.

As to symptomatology we have a very variable sequence of events, although there is generally a history of long illness with periodic attacks of fever, sweating, weakness, various neuralgic plains, neuritis and arthritis. The type of fever seems to vary greatly in different patients.

The incubation period usually lasts about two weeks, and the onset of the disease is insidious, usually characterized by generalized malaise, headache, pains in back of neck, fever, backache, and

*Read before the Medical Association of the Valley of Virginia, at Harrisonburg, Va., May 31, 1934.

various other muscular or joint symptoms. In addition, there is generally marked loss of appetite. The fever usually simulates, in a sense, that of a relapsing typhoid, and it is due to this tendency of this infection to have innumerable relapses that it gets its appropriate name of undulant fever.

It might be well, in passing, to note that there are ambulatory types of the disease. Many individuals who come in contact with animals having the infection evidently gain at least some partial immunity, as exemplified by positive agglutination reactions of their blood to the organism. Let it be stated, however, that one attack does not necessarily confer lasting immunity, as cases have been known to have had more than one infection.

As to the differential diagnosis, it is genarally necessary to differentiate it from typhoid, paratyphoid fever and the other diseases which have a prolonged temperature. Malaria is strongly suggested in some cases due to the presence of periodic sweats, chills and fever.

The principal method of differentiation is, of course, by the specific agglutination reaction.

Treatment is for the most part symptomatic and by the use of serums, vaccines and acriflavine. The serums which have been used are convalescent, autogenous, and animal. The vaccines used are autogenous and stock vaccines. Typhoid vaccine has been utilized as a non-specific protein therapy.

Prognosis is usually good, except in the malignant types, and the mortality rate varies from 2 to 14 per cent.

CASE HISTORY

The patient, a young farmer, age thirty-two, was first seen on March 9th, at which time he was complaining of headache, backache, and pains in lower extremities. His temperature was 102-5, pulse 64, respiration 22. A tentative diagnosis of influenza was made and he was treated for same. On March 11th, his temperature was 99, pulse 80, and respiration 18. He seemed very much better and was anxious to return to work.

On March 13th, his temperature rose to 100-6, pulse was 66, and respiration 20. He had had two bad chills this day followed by profuse sweating and weakness. Complaints today were pain in back of neck, backache, headache, chills, profuse sweating and loss of appetite.

Further questioning elicited the following information:

Past Medical History essentially negative.

History of Present Illness.—He had not been feeling well since the early part of the Fall of 1933. his chief complaint being that he felt weak and tired all the time and unable to do his work with any satisfaction. In November and December he had an attack of the "flu" which had confined him to the house for four or five days, and he did not seem to regain his strength following this attack. All during the Fall and Winter of 1933-34 he had been having occasional night sweats. The day before his last illness he had been using alcohol to excess.

Upon questioning him about the stock on his farm, he admitted that three years previously he had wanted to sell some cows in West Virginia, and, in order to do so, was required to test them for B. abortus. One of those he had intended to sell reacted. Being unable to sell her, he kept her on the farm, using the milk for home consumption. It developed that this cow had "freshened" in August of 1933 and that it was necessary for him to evacuate her uterus.

A specimen of his blood was taken and report received on March 17th. This showed his blood agglutinated B. abortus in a serum dilution of 1:640.

On March 21st, he developed a pleurisy of the right lower chest in the mid-axillary and subscapular region. On this date he was given 4 minims of a stock vaccine consisting of 1,000 million melitensis (abortus) and 1,000 million B. abortus (bovine and porcine) for each cubic centemeter.

On the 23rd, this dose was repeated, and on the 26th the dose was increased to 8 minims. The morning of the 28th, he developed scattered areas of broncho-pneumonia in the left chest with an accompanying pleurisy at the base, extending from the subscapular region to the anterior axillary line.

It being our impression at this time that the vaccine treatment was doing very little good and possibly aggravating the disease, as evidenced by the poor general condition of the patient, it was decided to attempt to give him some convalescent serum.

It was our desire to admit him to a hospital, but he was reticent about entering and wished treatment at home if possible.

On the 29th, the following day, he was given 15

c.c. of convalescent whole blood deep in the thigh. This blood was taken from a veterinarian who had had the disease four years previously and who within the last six months had showed a positive agglutination reaction of his serum in a dilution of 1:1500.

On March 31st, the patient felt much better, even though his temperature was still elevated. April 2nd, his temperature dropped to normal and remained so for twenty-four hours for the first time since the onset of this flare-up. On this day, however, he complained of a little sore throat which may in part have accounted for his elevation of temperature on the succeeding two days, for it took that length of time for his sore throat to subside.

Upon examination of the sites of his vaccine inoculations, it was noted on April 2nd that the site of the first inoculation was normal, while the site of the second inoculation had a slight area of induration and was quite tender. The site of the third was only slightly tender. These areas did not appear to be developing into true abscesses. The site of the whole blood injection was completely absorbed and no evidence of it remained.

On April 6th there was some evidence of fluctuation at the site of the second inoculation, and on this date his blood serum showed an agglutination reaction in a serum dilution of 1:12,800. On the 8th, the site of the third vaccine inoculation showed fluctuation, and on the 11th these two spots were incised and drained. The material obtained was mucilaginous in consistency and slightly purulent in character.

The temperature, pulse and respiration have remained normal since April 8th, and on May 3rd his agglutination reaction showed agglutination in a dilution of 1:1600. At this time his complaints consisted of weakness and stiffness of the joints.

In short, we have a young farmer who had apparently been suffering from an intermittent type of undulant fever infection for a period of approximately six months. He has a severe, acute, exacerbation of the disease, possibly instigated by an alcoholic excess, with the complication of a bilateral pleurisy and a low grade broncho-pneumonia.

For therapy, he was given three injections of a stock vaccine at intervals of three days, and, as his general condition appeared to be worse rather than improved, he was given convalescent serum with the object in view of attempting to increase the agglutinative properties. This objective was apparently realized. It is, of course, dangerous to draw conclusions from one case, but at least we might say that the treatment is suggestive.

REMARKS

It will be noted that from March 17th to April 6th the agglutination powers of this individual were increased from 1:640 to 1:12,800, and that this was accompanied by a corresponding improvement in the patient's condition. As to the cause for this it would be impossible to state definitely. The thought comes to mind that this increase in the agglutinative power may be due to the vaccine therapy, but observers have reported that this is not usually the case, and that at times the agglutination titre is lowered rather than raised. It is felt that this increase was probably due to the whole blood, either by specific action of the agglutinins in it or to the non-specific protein reaction of this foreign protein, or due to some stimulative power of the immune whole blood.

It may be well to note:

In sending in the blood serum for agglutination tests, following the first one, the notation was made on the slip that this was a known case, and what was desired was to know, if possible, the agglutinative powers of the patient's blood serum, and, if the report returned, would give the greatest dilution at which agglutination occurred.

Since April 8th the patient's temperature has been normal. For a while he complained of stiffness in the joints and weakness, but these symptoms have been slowly disappearing.

ACUTE PERFORATION OF GASTRIC ULCER FOLLOWED BY RUPTURE OF ABDOMINAL WOUND AND COMPLETE CURE—REPORT OF A CASE.

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Mr. A. L. W., a twenty-six-year-old white salesman, came to my office on December 29, 1933, complaining of a sudden very excruciating sharp pain in the "pit" of his stomach, of one-half hour duration, radiating to both shoulders and also both subcostal margins, then from the right upper side of his abdomen to his penis. The pain was so severe that it doubled him up. The patient stated that on this very same morning he began to complain of a discomfort of the epigastrium, followed sometime later by slight cramping pain in the same region, some belching and dyspepsia after his breakfast and lunch. His appetite was poor. In the afternoon he had a pharmacist give him a mixture of "bismuth and magnesia" which he was in the habit of taking for several months whenever he had indigestion. This would give him temporary relief. From my office the patient was immediately admitted to the Petersburg Hospital as Hospital Register No. 46-1619. While being admitted he fainted and his skin became very cold. He was given morphine sulphate, grain one-fourth, hypodermically, without any relief.

The patient stated that for several years he has had epigastric pain and abdominal fullness which seemed to come on at a definite period after meals. These would be relieved by an alkaline powder such as "bismuth and magnesia." Often times he had to lie down on account of severity of the pain. He never was on a diet and voluntarily admitted that candy and alcoholic drinks made up a good part of what he ate.

There was no family history of cancer, tuberculosis, heart trouble or kidney trouble. An uncle of his had a peptic ulcer.

On admission to the hospital the physical examination revealed an undernourished young white man in severe agonizing pain with typical hippocratic facies and had a tendency to keep both thighs flexed. His skin was cold and clammy, pulse of very low tension. Throat negative except that tongue was coated white. Chest negative. Abdomen showed a generalized board-like rigidity and tenderness with maximum tenderness over epigastrium. I could not make out any impairment of liver dullness. No masses made out. No evidence of any hernia.

The pre-operative laboratory findings were:

W.B.C.-11,080; hemoglobin-100 (Sahli); polymorphonuclears-73.5 per cent; lymphocytes-22.5 per cent; large mononuclears-1.5 per cent; transitional-1 per cent; eosinophil-0.5 per cent; basophil-1 per cent.

Catheterized specimen of urine: moderate trace of albumen; trace of sugar; no acetone; 3-4 r.b.c. per h.p.f.; 3 w.b.c. per h.p.f. The pre-operative temperature by rectum-99.2, pulse-82, respirations-32 a minute.

I operated on the patient soon after admission, about three hours after onset of acute attack. A phleboclysis of 5 per cent glucose in normal salt solution was given throughout the operation. The abdomen was opened through an upper right rectus muscle splitting incision. Suction was applied to abdominal cavity. The adjacent stomach around ulcer was walled off with hot laparotomy pads. The ulcer margin was freshened by cutting away about 2 mm. of its entire border. The ulcer was closed with one row of No. 00 p.c.g. through all layers of stomach. This was buried by two separate rows of interrupted Lembert sutures of the same material. The ends of the last row of sutures were left long and tied through a portion of gastro-hepatic omentum. A rubber tube was inserted through foreman of Winslow through a stab wound of the skin lateral to original incision. Another stab wound cigarette drain was placed suprapubically in the right lower quadrant. Closure in layers: Peritoneum and posterior sheath of rectus muscle with interrupted No. 2 chromic catgut and occasional lock stitch. Two interrupted No. 2 chromic catgut sutures through muscle and anterior sheath of rectus. Interrupted figure of eight No. 2 chromic catgut was used for anterior sheath of rectus, and interrupted No. 00 plain catgut for subcutaneous fat;

interrupted No. 00 dermal for skin. Soft perforated rubber tube drain about one-fourth inch in diameter for subcutaneous tissue at lower angle of wound. Patient returned from operating room in better condition than before admission, having had 1000 c.c. of 5 per cent glucose in normal salt solution by phleboclysis while in operating room, which was continued later on in the ward.

Fig. 1.—Photograph of patient taken seven and a half months after last operation, showing no evidence of abdominal weakness, incisional hernia or fistula.

Pathology: As soon as the peritoneum was opened, there was a hissing noise of escaping gas. Moderate amount of clear to white flaky straw-colored fluid was found in abdominal cavity which was demonstrated to come from a perforated ulceration anterior to lesser curvature of the stomach—about 5 cm. above the pylorus. The perforation was 1 cm. in diameter and surrounded by a calloused base about 2½ cm. in diameter.

Water was given by mouth on second post-operative day. Up until then he was getting phleboclysis of normal saline and 5 per cent glucose and small doses of insulin. On second post-operative day patient began to get phenobarbital, grains one and a half, every night at bedtime. All drains were removed on the fourth post-operative day. On the seventh post-operative night patient had night mare after a one and a half grain tablet of phenobarital, causing him to have an involuntary stool, to get out of bed and walk in the ward. Patient later stated that at the time he was not aware of what he was doing. On the following day all sutures were removed and nothing was found to be wrong with the wound. On tenth post-operative day, January 8, 1934, I noticed that his dressings were saturated with hemorrhagic exudate. Up until that time and particularly the day previous, the patient volunteered the information that he was turning himself a great deal in bed and was laughing quite a bit. He believed that "something tore loose" during a laughing spell while being entertained by his visitors. The dressings were removed and wound was found to have ruptured through all layers including peritoneum. As soon as ruptured abdominal wound was noticed, the patient was removed to operating room and the following is a description of the operation:

Under gas and ether anesthesia, abdomen cleaned with ether and painted with tincture of iodine. Peritoneum was freed from adhesions to viscera. Layers of abdominal wall including peritoneum were liberated sufficiently so that they were identified. There was a moderate amount of bleeding from separated adhesions which could not be clamped, and which continued in spite of application of hot laparotomy pads. Three interrupted silk-worm sutures were placed through all layers, including peritoneum and skin. Their ends were left untied. The lower-most old stab wound was opened and made larger with scissors. A tube drain was inserted through the stab wound down to the pelvis. The upper two-thirds of peritoneum was very accurately approximated with a continuous running mattress suture and occasional lock stitch of double strand chromic catgut and then tied.

With a separate suture of double strand catgut an attempt was made to approximate lower third of peritoneum. On account of friability of lower third of peritoneum, closure of this portion was very unsatisfactory. Muscle approximated with two interrupted sutures of No. 2 c.c.g. Fascia closed with continuous No. 2 c.c.g. Several interrupted No. 1 p.c.g. for subcutaneous fat. Skin with continuous

No. 00 dermal. One small rubber tube drain was inserted in lower end of wound. The previously inserted silk-worm sutures were tied through rubber guards.

Patient returned from operating room in good condition.

Pathology: Abdominal incision was completely split open except for its lower-most inch which was intact through all layers. The peritoneum was boggy and very friable in its lower-most third. Muscle appeared to be somewhat friable. No evidence of any infection of wound or leakage from stomach.

Fig. 2.—X-ray of stomach and duodenum taken on September 3, 1934, showing stomach and duodenum well filled without any evidence of ulceration.

All drains were removed on second post-operative day and continuous dermal suture on the seventh post-operative day, the lower two retention sutures on the twelfth day for they had become loose. The latter were replaced by two strips of flamed adhesive. The last retention suture was removed on the seventeenth day following second operation. All wounds were entirely healed at this time.

The patient was discharged from the hospital on January 25, 1934, via ambulance, condition improved and all wounds healed, twenty-seven days after first operation, seventeen days after second operation.

On February 5, 1934, thirty-eight days after first operation and twenty-eight days after second operation patient was allowed to be out of bed for the first time. On February 19, 1934, two weeks later, adhesive was permanently removed from abdomen.

While in bed patient received thyroid emplet grain one-fourth twice a day and also haliver oil with viosterol three drops three times a day. The patient had a good convalescence except for slight amount of distention and belching of gas. This disappeared on physiological doses of tincture of belladonna. The patient was kept on a bland diet.

The patient was allowed to drive a car on March 18, 1934, sixty-nine days after second operation, and has been driving a delivery truck every day since then.

He discontinued taking the tincture of belladonna March 20, 1934.

He had been on the peptic ulcer No. 3 diet (Dietary Suggestions, American Medical Association, 1933) since June 30, 1934. Patient admits that he drinks occasional beer without any gastric disturbance. He has not been taking any medicine since March 20, 1934. He has gained fifteen pounds since operation, now weighing 133 pounds. Figure 1 is a photograph which was taken on August 28, 1934, showing incisions have healed well and there is no evidence of any incisional hernia or fistula. Figure 2 is roentgenogram of stomach taken with barium meal on September 3, 1934.

The following is a roentgen report of Dr. W. Allen Barker of the examination of the stomach and duodenum made September 3, 1934:

"The stomach is filled readily and regular in contour. On fluoroscopic examination there could be seen a fleck of barium measuring about 1 cm. in diameter about one or two cm. above the pylorus. This may be due to a slight infolding of the mucous membrane of the stomach as result of operative repair. However, with this region well filled no irregularity could be demonstrated in the stomach. The duodenal bulb was constantly deformed but no evidence of ulceration could be demonstrated. The deformity of the duodenal bulb is probably due to adhesions. At the end of six hours the stomach was empty with the head of the barium meal in the distal end of the transverse colon."

Medical Arts Building.

SARCOMA OF THE UTERUS.*

RANDOLPH H. HOGE, M. D.,
Richmond, Va.

Mural sarcomata of the uterus are considered by some pathologists, most notably Ewing, to be malignant tumors arising from the muscle cells of the uterus. Accepting this myogenic origin, the name sarcoma becomes a misnomer, unless the definition of sarcoma is extended to include tumors arising from other tissues of mesodermic origin in addition to connective tissue. It is in the latter sense and in conformance with general clinical usage that the term sarcoma is used herein, while the pathologist with excellent authority and reason gives the more puristic term, myoma malignum, to the specimen examined.

Lockyer, writing in Lewis' Surgery, describes sarcoma of the uterus as a very rare condition and reports that about 700 cases are on record. However, Kasman, in 1931, having added four cases of his own to those previously reported in the literature, found the total number only 396. Additional cases were reported in that year and in 1932; and in 1933 about twenty new cases were recorded, making a total now which probably conforms to the estimate of "something under 500" given by Schumann in Nelson's Surgery.

The incidence of the disease, reported in terms of its ratio to benign leiomyomata, or fibroid tumors of the uterus, a condition with which sarcoma is in the majority of cases associated, varies in the statistics given by various authors and averages about 1 per cent. Kasman had four cases of sarcomata to 154 of fibromyomata, a percentage of 2.6. Meigs states that in 1,433 hysterectomies performed at the Massachusetts General Hospital for fibroid tumors, twenty-three showed definite leiomyosarcomas, or 1.6 per cent. Meaker, of the Boston University School of Medicine, reported four leiomyosarcomas of the uterus in a series of 107 hysterectomies performed for supposed fibroid tumors during the two-year period, 1928-1929, a percentage of 3.7. Pemberton found fourteen leiomyosarcomas as compared with 2,991 cases of fibroids between 1905 and 1927 at the Woman's Free Hospital of Brookline, Mass., a percentage of 0.47. He states that their standards are more strict than average. Indeed, variations in standards of malignancy and in care of examinations probably largely account for the differences in the figures given by various authors.

The records at the Memorial and St. Philip Hospitals made between August 1, 1931, and March 15, 1934, show 323 hysterectomies for benign leiomyomata, with only one case of sarcoma, that to be presented tonight. This is a percentage of 0.3. During this same period there occurred in these two hospitals fifty-three cases of carcinoma of the cervix and two of the corpus. This is a ratio of 1:55 between sarcoma and carcinoma, and is comparable to ratios quoted in Nelson's and in Lewis' of 1:50, 1:34, and 1:40.

The treatment of choice is panhysterectomy with bilateral salpingo-oöphorectomy followed, perhaps, by deep roentgen ray therapy. Most cases have supravaginal hysterectomies, however, because the true diagnosis is not made until after operation. This statement calls attention to the desirability of opening all supposed fibromyomata at operation.

The prognosis varies considerably and according to duration, position, and cell type.

A case report follows:

Case report sarcoma of uterus. Memorial Hospital, 3906.

Mrs. R. J., thirty-one, a pallid, fairly well nourished, white worker in a tobacco factory, was referred to me in January, 1932, by a friend of hers and an operative patient of mine. The reference took place on the decease of her former physician, who had been giving her local treatments for "kidney trouble."

Her complaint was that of profuse vaginal bleeding and attendant weakness. The diagnosis of a pelvic tumor, well suggested by the history given by the patient, needed hardly more than inspection of the abdomen for confirmation. Following a complete examination a diagnosis of fibromyomata uteri was made, and operation was advised. Because of the concomitant presence of bronchitis her entry into

*From the Department of Surgery, Medical College of Virginia.

Read before the Richmond Academy of Medicine, March, 1934.

the hospital was delayed until February 18th. The patient had been partially exsanguinated, so, in the interim, in addition to treating the bronchitis, an attempt was made to partially alleviate the anemia. Iron ammonium citrate was given.

When the patient entered the hospital a record of an admission two and one-half years previously was obtained. The history at that time was meager. The chief complaint then was of pain in the right lower abdominal quadrant and profuse menstrual bleeding, the flow lasting two to three weeks at a time. This condition had been especially marked for three months. For two weeks she had noticed swelling of the abdomen. She, it is quoted, had had "trouble with her menses all of her life since fourteen years of age." This was not further elaborated. There had been no pregnancies.

The reported examination at that time was limited and as follows: "Shows white female with palpable mass in right lower quadrant. Pain and tenderness on pressure. Abdomen is definitely enlarged. No rigidity. Bleeding from vagina." Pelvic examination was deferred and not later recorded. The impression was given as follows: "Fibroid. Pelvic inflammation. Ovarian cyst. Salpingitis. Pyelitis."

There is no doubt that the patient was acutely ill. Her temperature reached 103 degrees on each of the first fifteen of the twenty-one days she was in the hospital. Her pulse rate varied from 70 to 120, averaging for the most part about 100. Her respirations varied between 20 and 24. The nurses' notes showed that on admission the blood flow was saturating perineal pads at frequent intervals; that she was passing clots also; and that she received morphine for pain, and ergot.

The leucocyte count the day after the first admission was 26,000, with a differential of 91-9. Eight days later the white cell count was 30,000, the differential 88-12, the hemoglobin 80, and the red cell count 4,120,000. The urinalysis on the first admission was as follows: amber; cloudy; acid; 1.012; albumin, heavy trace; sugar, negative; frequent squamous epithelial cells, numerous bacteria, many leucocytes, occasional red blood corpuscles, and occasional hyaline casts. Eight days later the urinalysis was essentially the same. A blood culture and a Widal test were negative.

There were no progress notes, but it is apparent that after a considerable delay her condition improved, and she was discharged on the twenty-first day. The final diagnosis of "Fibroid Uterus and Chronic Salpingitis" appears on her original record. The nurses' notes on her last day in the hospital are of interest. These showed that she had had a good night; that breakfast had been omited; that morphine gr. ⅛ and hyoscine gr. 1/200 had been refused; that she later ate well; and that she was discharged. In the absence of any apparent indication for the withholding of breakfast and for the giving of the hypodermic medication, one feels that an operation was advised and, perhaps, refused.

On the second admission, two and one-half years later, the patient stated that the menorrhagia had grown progressively worse. For one year it had been necessary for her to see her phyician at each menstrual period in an effort to check the bleeding. Since Christmas, two months before, she had thought she could feel a tumor. She stated that her menstrual life had begun at twelve, and the flow had been regular until two years ago, presumably until the onset of symptoms which brought her to the hospital the first time.

The general physical examination, as recorded on the second admission, was not remarkable. The local examination revealed a firm, non-tender mass about four inches in diameter, freely movable, lying in the lower mid-abdomen and apparently continuous with the cervix.

The temperature, pulse, and respirations were normal. The blood count was as follows: Hgb. 70; red count 3,780,000; leucocytes 8,000; polymorphonuclear neutrophils 73; eosinophils 2; small lymphocytes 21; myelocytes 4. The urine, as at the previous admission, showed a heavy trace of albumin with red cells and leucocytes.

The patient was operated upon February 20, 1932, the day following admission, under spinal anesthesia, novocain 150 mgm. supplemented at the close with gas-ether inhalation. The pre-operative diagnosis was fibromyomata uteri, and such was the diagnosis when the abdomen was closed. A hydrosalpinx and an ovarian abscess were present on each side. The uterus was removed supravaginally together with both tubes and ovaries. Immediately following the operation the uterus was opened. From the gross appearance seen then it became apparent that this was no ordinary fibroid uterus. The gross

appearance was as given in Dr. L. C. Pusch's report which follows:

"The body of a uterus distorted by multiple fibroid masses, is received irregularly incised, in which condition its dimensions are 18x10x7 cm.; and its weight, with attached right hydrosalpinx and ovary, 625 gm. Peritoneal surfaces are partly covered with stubs of fibrous adhesions. One soft, grayish-yellow, once-pedunculated mass, 5 cm. in diameter, now lies free in the endometrial cavity, apparently an extension from a larger, similar mass, 6½ cm. in diameter, which occupies an intramural position. A firm, white subserous mass, 4 cm. in diameter, is received divided. The hydrosalpinx has a thin distended wall with the lateral extremity 4 cm. broad. The ovary embraces an incised cyst, 3½ cm. in diameter, having a hemorrhagic lining. There is also a smaller cyst. Received separately is a Fallopian tube, 2 cm. in diameter, adherent to an ovary, the latter embracing the wall of an abscess. There is also a thin-walled ovarian cyst enclosing coagulated blood."

The microscopic description was as follows: "The large intramural mass and its extension into the uterine cavity are composed of densely cellular anaplastic smooth muscle cells. Invasive tendency is manifest at its border. Chronic inflammatory response occurs in myometrium, Fallopian tubes and abscess wall. A hyperlastic structure is seen in the endometrium."

The pathological diagnosis was as follows: Myoma malignum uteri (myosarcoma). Benign subserous leiomyoma. Bilateral chronic salpingitis with hydrosalpinx. Abscess of ovary. Chronic metritis.

The patient's convalescence was uneventful. Two Wassermann reactions were positive. She was discharged on March 5th, the fourteenth post-operative day.

Follow up: The patient has been seen at frequent intervals since the operation. She was last examined this month (March, 1934) and gave no signs or symptoms of a local recurrence or of metastases.

SUMMARY

A case of sarcoma of the uterus is reported.

In this case supravaginal hysterectomy with bilateral salpingo-oöphorectomy was performed.

Twenty-five months after operation the patient is apparently free of recurrence or metastases.

The incidence of the disease in a series of 324 consecutive hysterectomies, performed at The Memorial and St. Philip Hospitals for supposed benign leiomyoma, has been one, or 0.3 per cent.

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Memorial Hospital.

Correspondence

Amyl Nitrite Antidotal to Cyanides.

TO THE EDITOR:

Belated recognition has recently come to a fellow of the Medical Society of Virginia for important scientific work done as long ago as 1888, along the line indicated in the title. In that year Dr. Lewis G. Pedigo, of Roanoke, now be it said almost *completing his fiftieth year* as a fellow of this society, presented a paper before the Society at a Norfolk meeting, the title of which is, "Antagonism between Amyl Nitrite and Prussic Acid."

In the *American Journal of the Medical Sciences,* December, 1934, number six, volume 188, p. 767, occurs a detailed recital of pharmacological research work on the "Comparative Values of Several Antidotes in Cyanid Poisoning," made at the Lilly Research Laboratories in Indianapolis. This article is by K. K. Chen, Director of Pharmacologic Research; Charles L. Rose, Pharmacologist; and G. H. A. Clowes, Director of Research of the Lilly Laboratories. On page 3 of the reprint of this paper may be noted the following:

> "After the appearance of our--(former)—paper, it was our good fortune to learn by personal communication that an American physician, Dr. Pedigo, in 1888, proved beyond doubt the value of Amyl Nitrite against cyanid poisoning in dogs. Unfortunately, his article

has not been listed in easily available indices or mentioned in textbooks, so that it is difficult for later investigators to be aware of his important work. The delay in appreciating his results has probably also caused the tardy development of the nitrite therapy."

In the article of Dr. Chen and his associates, as well as in his personal letters, will be seen a very just appreciation, by men eminent in this branch of medical knowledge, of the scientific investigation done by a fellow-worker in the same exact field. Furthermore, these erudite and accomplished scientists evidently believe in the aphorism, "Honor to whom honor is due," honor which they cordially bestow. Not merely this, but Dr. Pedigo is gratified by the receipt—even as this sketch is being written—of a reprint, bearing on its cover in pen-and-ink this inscription: "In appreciation of your pioneer work on amyl nitrite"; and signed, "Yours respectfully, K. K. Chen."

Dr. Pedigo's personal friends, and his medical friends as well, are no little pleased that this recognition has come to him in the evening of life—the more so since failing health has necessitated his retirement from practice, and restricted his activities.

It would seem as though Dr. Pedigo himself only partially comprehended the value of his discovery, as he remarked after reading the article referred to: "I had regarded this bit of research"—meaning his own experiments—"as of purely *scientific* interest, but Dr. Chen's elaborate summary of the incidence of cyanide poisoning is a revelation to me. Since cases of suicidal and accidental origin are so common, I am of the opinion that publicity of this discovery would be of much *practical* importance."

Previous to receiving the printed page, he had been sent by Dr. Chen a copy of the type-script of his article, this being incident to the following correspondence, which unfortunately has been greatly condensed, owing to lack of space:

MESSRS. ELI LILLY AND CO.:

I note you publish review of writings on Amyl Nitrite in Cyanid poisoning. You make reference to three authorities, all dated 1933. I enclose reprint of paper read by me before the Medical Society of Virginia in 1888. You will find every essential point in this later research duly covered. These gentlemen *are just forty-four years late.* Since my paper, I have never seen amyl nitrite mentioned in any lists of poisons and antidotes. * * * Moral: Every research worker should be an expert publicity man.

Yours most truly,

LEWIS G. PEDIGO.

To this letter reply was made by Dr. K. K. Chen, of the Lilly Company:

MY DEAR DR. PEDIGO:

* * * It is very gratifying to know that forty-four years ago you already demonstrated the antagonism between amyl nitrite and hydrocyanic acid. I am greatly impressed by your accurate observations, made during the experiments. I wish to take this opportunity to pay you my tribute for your pioneer work in this field, and to express my regret that we were not aware of your important discovery. * * *

Please do not think we intentionally omitted mentioning your contribution. I went through index catalog in Surgeon-General's office—found no mention of your report. I consider it extremely unfortunate that such a valuable article as yours is not prominently mentioned in textbooks and journals. * * * In a few months we hope to write another paper. We assure you we will then review your early study, and give you due credit.

Yours sincerely,

K. K. CHEN, *Ph. D., M. D.*

I have before me, as I write, one of Dr. Pedigo's reprints, yellowed with age. It was published in 1888, nearly half a century ago, which is obviously too voluminous to quote more than very briefly. In the beginning he apologizes for "the crudeness and incompleteness of my researches, * * * and says: "The difference between a well-equipped laboratory * * * and a blacksmith shop (!) with such apparatus as a country doctor can conjure up, is at once appreciated." The more credit therefore, I would say.

To summarize, he describes with exact detail, three experiments on dogs, in the first using only one dog, in the other two using dogs in pairs in each test, one of course as a control. Dilute hydrocyanic acid was given, and amyl nitrite administered, varying the conditions of the tests. The treated dog lived, in both the latter tests, while the control promptly succumbed.

His article goes very fully into the pharmacology and the toxicology of the drugs discussed, and his conclusions, arrived at step by step as the experiments proceeded, are set forth most succinctly. However, with the attitude of the true scientist, he ends his paper in these words: "If by further accumulation of facts the hypotheses here advanced

shall be scattered to the four winds of heaven, let them go; I have no affection for them."

It is not every day that a valuable scientific fact comes to light through the investigations of a member of our Society, and it affords me the greatest pleasure to call attention to the quite considerable honor accorded one of our esteemed Fellows, who has now grown gray in the service of humanity.

E. P. TOMPKINS, M. D.

Lexington, Va.
February 27, 1935.

Public Health Statistics

I. C. RIGGIN, M. D.
Health Commissioner of Virginia

The communicable disease report received at the office of Dr. G. F. McGinnes, State Epidemiologist, during February, 1935, showed the following cases compared with the same month in 1934:

	1935	*1934*
Typhoid and Paratyphoid Fever	32	18
Diphtheria	71	106
Scarlet Fever	226	258
Measles	3,785	3,401
Meningitis	22	10
Poliomyelitis	3	2
Rocky Mountain Spotted Fever	0	0
Typhus Fever	0	0
Undulant Fever	1	2
Tularaemia	3	3
Smallpox	1	1

Within the past few months there has been a great advancement in the Rural Health Work of the State. Twenty-three additional counties in Virginia have inaugurated full-time health service under medical direction making a total of thirty-seven counties, representing approximately 60 per cent of the rural population receiving this essential governmental service. This advance has been made possible by the allocation of funds from the United States Public Health Service to the Virginia State Department of Health for the purpose of organizing new departments where no service previously existed and to assist those having inadequate local departments.

All local communities receiving help from these United States Public Health Service funds must appropriate a proportionate amount of money to meet the operating expenses of such a department with the agreement that the unit must be established on a full-time basis under the direct supervision of a medical health officer.

The counties' share of the appropriation is not in excess of 35 cents per capita. Moreover, the work done in the prevention of disease, the general advancement in health, particularly that of the school children, saves the county far more than this amount. As some of the counties were so small and had so little taxable wealth, it was deemed expedient and economical for them to combine with one or more neighboring counties into a health district.

Each of these districts has a minimum personnel consisting of a medical health officer, a public health nurse, a sanitation officer, and a clerk. The duties of such a personnel are manifold. The medical health officer coordinates the work of the staff. He must be a specialist in the diagnosis and control of communicable diseases. He effects prompt reporting of all communicable diseases, visits the case to trace the source of infection, establishes quarantine, and takes all other preventive measures. He organizes and assists in the conduction of clinics such as tuberculosis, orthopedic, dental, nutritional, and prenatal. He collects specimens and cultures for laboratory examination. He assists physicians in inaugurating immunization programs. He examines school children and pre-school children routinely. Parents are notified of the existence of defects and are urged to take the children to their family physician for correction. Where these examinations are performed the number of defects corrected is greatly increased and the subsequent saving of time lost on account of sickness is inestimable. The nurse, sanitation officer, and clerk assist the medical health officer in the performance of his many duties. It would be impossible to list their complete program in an article of this character. However, the benefits acquired in the improved health of the community more than balances the funds expended.

This program at the present time includes thirty-seven counties having full-time health units, with a personnel totaling 100. There are sixteen medical health officers, twenty-five sanitation officers, forty nurses, and fourteen clerks employed at present. In addition, two large health units, the Southwest Health District and the Shenandoah Valley Unit,

were instituted because the geographical situation of these counties in the southwestern section of the State is such that in a sense they are isolated from the facilities and advantages so accessible to the counties situated near the State Department of Health in Richmond. Each of these units supply the services of a regular health unit and in addition, the much needed facilities of a complete laboratory.

New Members

Since the names listed in the October issue of the MONTHLY, the following have been admitted to membership in the Medical Society of Virginia:

Dr. Mallory S. Andrews, Norfolk.
Dr. Frank L. Apperly, Richmond.
Dr. Benjamin H. Bailey, Sandston.
Dr. Howard H. Ballard, Pocahontas.
Dr. James V. Bickford, Norfolk.
Dr. William S. Blakiston, Arlington.
Dr. H. R. Coleman, Jr., Lexington.
Dr. Robert B. Cralle, Farmville.
Dr. Grant R. Elliott, Orange.
Dr. Adam T. Finch, Jr., Chase City.
Dr. Daniel S. Fisher, Parksley.
Dr. Nathan P. Fitts, Maurertown.
Dr. Louise F. Galvin, Richmond.
Dr. Fred T. Hauser, Bland.
Dr. Richard S. Herring, Richmond.
Dr. Edward M. Holmes, Richmond.
Dr. Lawrence P. Jones, Emporia.
Dr. Joseph L. Kinzie, Salem.
Dr. Frederick B. Mandeville, Richmond.
Dr. Thomas S. Meade, Richmond.
Dr. Claude A. Nunnally, Fredericksburg.
Dr. Prosser H. Picot, Richmond.
Dr. Irl C. Riggin, Richmond.
Dr. Charles W. Rodgers, Staunton.
Dr. Clyde F. Ross, Richmond.
Dr. Elizabeth B. Sherman, Front Royal.
Dr. Henry B. Showalter, Kenbridge.
Dr. Harrison T. Smith, Independence.
Dr. Henry C. Spalding, Richmond.
Dr. Joseph S. Staley, Marion.
Dr. Thomas E. Stanley, Beaverdam.
Dr. Lewis B. Staton, Richmond.
Dr. Algernon K. Turner, Martinsville.
Dr. Edwin D. Vaughan, Ashland.

Woman's Auxiliary to the Medical Society of Va.

President—MRS. JOSEPH BEAR, 3012 Monument Ave., Richmond.
President-Elect—MRS. FLETCHER J. WRIGHT, Petersburg.
Recording Secretary—MRS. JAMES B. STONE, 2042 Park Ave., Richmond.
Corresponding Secretary—MRS. AMBROSE MCGEE, 4107 Kensington Ave., Richmond.
Treasurer—MRS. REUBEN F. SIMMS, 2034 Park Ave., Richmond.

State Board Meeting.

The Executive Board of the Auxiliary to the Medical Society of Virginia met at the Richmond Academy of Medicine Building, Richmond, on Monday, March 11th, at eleven o'clock. The meeting was attended by twenty-six members, including several local auxiliary presidents.

Mrs. Joseph Bear, State President, presided. Splendid reports were given by committee chairmen and by the presidents. Important matters were discussed. Delegates were appointed to the National meeting at Atlantic City in June.

The Board adjourned at one o'clock to the John Marshall Hotel, where Mrs. Joseph Bear was hostess at a very lovely luncheon. This hour was particularly enjoyable and delightful. The social intercourse was a most worthwhile feature of the meeting.

James City-New Kent Medical Auxiliary.

Our Auxiliary is very small, only nine members, so we are mostly a social group at present. However, we stand ready to be of assistance to our physicians and charitable organizations. Just a few of the things we have accomplished in the past year are:

Two members acted as secretaries to physicians during pre-school clinic.

Four dollars from sale of candy.

Nine large bundles of clothing and toys for needy families at Christmas.

Members are active in all charitable societies in counties.

One member just added to the Nursing Committee of the local Red Cross.

Offered to provide vaccine to use in vaccinating children of indigent families.

After paying our obligations, we have $8.00 in the treasury.

MABEL R. HENDERSON, *Reporter.*
(MRS. L. V. HENDERSON.)

Postgraduate Medical Auxiliary.

A very delightful luncheon was given by the Auxiliary at the Petersburg Country Club on the 26th of February, in honor of Mrs. Joseph Bear, State President, and Mrs. F. J. Wright, President-elect. Other guests were Mrs. Reuben Simms, State Treasurer, Mrs. J. B. Stone, State Secretary, and Mrs. A. G. Shetter, President of the Richmond Auxiliary.

Mrs. Philip Jacobson presided over the business meeting and urged members to be constant in helpful attentions to the hospital and to their pledges per member and to expand the work.

Mrs. Bear stressed the importance of the medical work and pointed out the threefold purpose of the auxiliary: to extend the aim of the medical profession; to work with health committees, clinics and Women's Clubs in the health problems, to establish friends among doctors' families and to organize junior auxiliaries among the doctors' children and educate them along the lines of health; and to create groups for the entertainment of medical societies.

Mrs. H. M. Snead, who was one of a committee in charge of the recent linen shower to the hospital, gave her report in detail, and the results were much lauded by Mrs. Bear and other visitors.

Mrs. Shetter gave a brief greeting from the Richmond Auxiliary; Mrs. Stone outlined the work of the medical auxiliaries; Mrs. Reuben Simms gave a short talk on expending finances; and Mrs. Fletcher J. Wright, President-elect, spoke of the value of organization.

There were about thirty of the local doctors' wives present at the meeting.

Mid-Tidewater Medical Society Auxiliary.

The regular meeting of the Woman's Auxiliary to the Mid-Tidewater Medical Society was held in the home of Mrs. W. E. Croxton, at West Point, the 22nd of January.

The meeting opened with Mrs. Hawes Campbell, president, presiding. She gave a short talk on the State meeting and other matters of business were discussed.

The program chairman was absent and no program was arranged. The social side of these meetings so far has been very much enjoyed as it gives the wives of physicians a chance to become acquainted.

ELIZABETH S. HARRIS,
Secretary.

Richmond Auxiliary.

The Woman's Auxiliary to the Richmond Academy of Medicine has gone ahead under the capable leadership of Mrs. A. G. Shetter. Each committee is well under way in its year project. Books have been read and given to the children in Dooley hospital, milk given to undernourished school children and the sick have been visited.

A membership drive is now on. The losing side has to entertain the winners with a bridge party and there is in store a lovely prize for the one who brings in the most new members.

Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted by the Council on Pharmacy and Chemistry of the A. M. A.:

Merck & Co., Inc.
Tablets Cebione—Merck, 0.05 Gm.
Parke, Davis & Co.
Capsules Silvol, 6 grains.
Kapseals Ortal Sodium with Amidopyrine.

The following product has been accepted for inclusion in the List of Articles and Brands Accepted by the Council But Not Described in N. N. R. (New and Non-official Remedies, 1934, p. 443):

Sharp & Dohme
Ampules Sodium Cacodylate—Mulford, 7½ grains, 5 c.c.

Propaganda for Reform

Viosterol Preparations and Gallstones.—The widespread clinical administration of viosterol preparations has raised problems concerning several possible late effects and side actions. Among these questions is that of the formation of gallstones. Jones and Laing (Am. J. Physiol., 110:471 (Dec. 1), 1934), have recently undertaken to ascertain whether the current use of viosterol preparations might lead to an increased output of calcium in the bile in dogs. One hundred and ninety-three analyses of bile calcium before the administration of a viosterol preparation were made and seventy-three after the daily administration of from 5 to 10 c.c. of viosterol in oil. From the results obtained by these investigators it was evident that doses of viosterol preparations considerably larger than would ordinarily be used in clini-

cal practice do not raise the bile calcium concentration or modify bile output in the dog. Doses of viosterol preparations large enough to increase definitely the blood calcium level will increase the bile calcium concentration and decrease the output of bile. Jones and Laing hoped to obtain clinical confirmation on patients with chronic biliary fistulas, but had not yet been able to do this. When and if confirmation is obtained, one more possible danger of viosterol administration will be eliminated. (Jour. A. M. A., February 23, 1935, p. 655.)

Book Announcements

Recent Acquisitions to the Library, Medical College of Virginia.

The following books and others in the Library of the Medical College of Virginia may be borrowed by members of the Medical Society of Virginia, the only charge being return postage:

Adams, G.—Psychology: Science or Superstition?
Ashford, B. K.—A Soldier in Science. The Autobiography of Bailey K. Ashford.
Bainbridge, W. S.—Report on the Seventh International Congress of Military Medicine and Pharmacy and Meetings of the Permanent Committee.
Bernard, L.—Trois Medecins Americains: W. S. Thayer, Linsly R. Williams and W. H. Welch.
Bizzell, W. B.—The Relations of Learning.
Blacker, C. P., ed.—The Chances of Morbid Inheritance.
Cold Spring Harbor Symposia on Quantitative Biology, vol. 2.
Dandy, W. E.—Benign Tumors in the Third Ventricle of the Brain: Diagnosis and Treatment.
Davis, W.—The Advance of Science.
Dimmitt, P. S.—Manual of Clinical Laboratory Methods.
Doyle, H. M.—A Child Went Forth. The autobiography of Dr. Helen MacKnight Doyle.
Ford, A.—The Story of Scientific Psychology.
Franklin, K. J.—De Venarum Ostiolis 1603 of Hieronymus Fabricius of Aquapendente (1533?-1619).
Gilchrist, D. B., ed.—Doctoral Dissertations Accepted by American Universities, 1933-1934.
Grimes, J. M.—Institutional Care of Mental Patients in the United States.
Haberland, H. F. O.—Die Operative Technik des Tierexperimentes.
Hollender & Cottle—Physical Therapy in Diseases of the Eye, Ear, Nose and Throat.
Jaffe, B.—The Lives and Achievements of the Great Chemists.
Knaus, H.—Periodic Fertility and Sterility in Woman.
Lange, N. A.—Handbook of Chemistry.
Leland, W. G.—Nationalism.
Logie, H. B., ed.—Standard Classified Nomenclature of Disease, 1935 ed.
Macartney, W. N.—Observations of a General Practitioner.
Macbride and Martin—The Myxomycetes.
Maximow and Bloom.—A Textbook of Histology, 2nd ed.
Mulholland, J.—Quicker Than the Eye. The Magic and Magicians of the World.
Neuberger, M.—History of Medicine.
Pearl and De Witt.—The Ancestry of the Long-Lived.
Pearl, R.—Modes of Research in Genetics.
Polevski, J.—The Heart Visible.
de Reaumur, R. A. F.—The Natural History of Ants.
Schmucker, S. C.—Heredity and Parenthood.
Sharpey-Schafer, E.—Experimental Physiology. 5th ed. Rev.
Singer, C.—The Story of Living Things: A short account of the evolution of the biological sciences.
Sullivan, J. W. N.—Three Men Discuss Relativity.
U. S. Dept. of Labor—Maternal Mortality in Fifteen States. Bureau Pub. No. 223.
Wall, A. O.—Sex and Sex Worship.

Conception Period of Women. By DR. KYUSAKU OGINO, Head of the Gynaecological Section of Takeyama Hospital, Nilgata, Japan (Nippon). English Translation by DR. YONEZ MIYAGAWA, Director of Government Institute for Infectious Diseases, Tokyo Imperial University, Hongooku, Tokyo, Japan. June 6, 1934. Medical Arts Publishing Company. Harrisburg, Pa. Octavo of 94 pages. Leatherette binding. Price, $1.00.

This small book contains ninety-four pages, many of which are filled with charts for estimating the safe and the conception period of women. One of the most interesting charts shows the eight days during which conception can occur in women with menstrual cycles varying between twenty-three and forty days.

The book is written in fairly simple language to appeal to the laity. It contains a brief review of the current literature on the safe period. The control of conception is exceedingly simple if one can rely on this publication. However, the theories stated have not been studied sufficiently to be dependable in cases where pregnancy is contra-indicated.

H. H. WARE, JR.

The Autonomic Diseases or the Rheumatic Syndrome. By T. M. RIVERS, M. D. Kissimmee, Fla. Dorrance and Company, Inc. Philadelphia. 1934. Octavo of 299 pages. Cloth. Price, $3.00.

The author of this very interesting volume is apparently a general practitioner of medicine who is particularly interested in chronic diseases. He attempts to show that the rheumatic syndrome, particularly chronic joint disease, is fundamentally related to a disturbance of the autonomic nervous system.

I think it is unfortunate that Dr. Rivers should have convinced himself so completely that the "rheumatic syndrome" is concerned only, from an etiological standpoint, with disturbance of this part of the nervous system. The arguments he presents in favor of this concept are interesting, but to the reviewer they are not convincing for they are based upon many hypothetical ideas which I don't think can be substantiated by established facts. You will get the impression that the writer is a student of the great philosopher, Herbert Spencer, who, incidentally, is quoted in the first paragraph of the introduction.

Admitting that there is much controversial material presented in this book, nevertheless, I am convinced that this volume justifies itself because the author has given one of the most useful discussions of the therapeutics of chronic joint diseases that I have ever reviewed. He has emphasized the very fundamental truth that chronic joint disease is a great deal more than simply a disability associated with reactions in the joints, but rather that it is a constitutional malady producing a disability in a very complex fashion and caused by disturbances in the body of a widespread nature. This concept of the treatment of this disease is becoming more obvious, the more chronic joint disease is studied. For this reason, this book offers many useful suggestions in the care of these invalided individuals and can be profitably used by any one interested in chronic arthritis.

WM. B. PORTER.

Mouth Infections. Clinical Histories. By OLIVER T. OSBORNE, M. A., M. D., F. A. C. P. Professor of Therapeutics, Emeritus, and formerly Clinical Professor of Medicine, Yale University. New Haven. 1934. Octavo of 119-vi pages. Cloth. Price, $2.00.

The author's motive in publishing this small text is expressed in his assertion "that the greatest menace to the civilized world is mouth infection." While health workers in all branches of the healing arts are now cognizant of oral infections and their relations to other bodily ills, one might wisely question the paramount rating given by the author to the phenomenon of focal infection involving foci in the oral cavity.

The author's opinion that proven infectious foci should be removed by one means or another is in accord with modern practices. However, his extreme skepticism in regard to pulpless teeth is not warranted nor based on sound observations. It is quite apparent that despite the author's interest in the dental diseases his acquaintance with these problems is only casual. His observations as recorded, using such terms as "dead teeth," "nasty, stinking bridges," "rotten," "perfectly terrible mouth," etc., indicate the non-technical character of the author's dental knowledge. One might question the value of such observations.

As stated in his introductory remarks, no effort is made to correlate findings. The case reports are merely brief recitations of co-incidental findings with no attempt to definitely link the mouth infections to the concurrent body ailments. The text is, therefore, of little value except in the way of propaganda.

HARRY LYONS.

The Technique of Contraception. An Outline. By ERIC M. MATSNER, M. D. Foreword by Robert L. Dickinson, M. D. Introduction by Foster Kennedy, M. D. Second Edition. Published for the American Birth Control League, Inc. New York. The Williams & Wilkins Company, Baltimore. 1934. Pamphlet of 38 pages. Illustrated. Price, 50 cents.

This outline consists of thirty-eight pages and reviews in a rather clear and concise form the present methods of contraception. The methods are grouped under four headings:

1. General measures, such as abstinence.
2. Measures used by the husband, such as coitus interruptus (withdrawal) and condom.
3. Measures used by the wife, such as douching, chemicals (suppositories, tablets and jellies) and mechanical barriers (tampons, sponges and pessaries).
4. Measures giving prolonged protection, such as intrauterine stems, hormones, spermatoxins.

The types of vaginal diaphragms are discussed and the importance of a thorough gynecological examination is stressed. Instructions as to the method of fitting and inserting the diaphragm are explained.

For anyone interested in this subject this book will be most interesting and helpful.

H. H. WARE, JR.

Community Enterprise In Preventing Blidness. By C. EDITH KERBY, Statistician, National Society for the Prevention of Blindness. Publication 161. National Society for the Prevention of Blindness, Inc., 50 West 50th Street, New York, N. Y. Pamphlet of 11 pages. Price, 10 cents.

The Romance of Exploration and Emergency First-Aid from Stanley to Byrd. Burroughs Wellcome and Company. New York. Printed in England. 12mo. of 144 pages. Illustrated. Cloth.

Virginia Medical Monthly

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Editorial

A Pioneer Virginia Scientist.

Before the Medical Society of Virginia at its meeting in Norfolk in 1888, Dr. Lewis G. Pedigo, of Roanoke, presented a paper on the antagonism between amyl nitrite and prussic acid. His report was based upon experiments upon dogs and was the earliest demonstration of the value of amyl nitrite in cyanide poisoning. These facts have been brought to light recently in a paper by K. K. Chen, Director of Pharmacologic Research of the Lilly Research Laboratories, published in the December number of the *American Journal of Medical Sciences*. Elsewhere in this issue of the MONTHLY a more detailed account of Dr. Pedigo's discovery is given. This is but another instance of the fact that a man need not have at his disposal a large research laboratory in order to make discoveries in medicine. Robert Koch in Germany and James McKenzie in England were outstanding examples of the fact that an inspired practitioner may unearth scientific facts of lasting worth and importance.

Save the Annals.

About the time of the World War, largely through the backing of a number of influential and public-spirited physicians, a new and unique medical publication was launched in this country—the *Annals of Medical History*. Since that time nothing but the best has gone into it. The editor, Francis R. Packard, has to a remarkable degree kept the quality of its contributions on a high plane of literary excellence. During the seventeen years of its existence the *Annals* has served as a medium of expression for the ablest medical historians of two continents. The publisher, Paul B. Hoeber, has been no less zealous. True to his original determination he has never permitted the high standards set for the magazine to be sacrificed for any financial consideration and has for years cheerfully pocketed an annual deficit. No one who is familiar with the striking format of this famous publication, its fine paper, handsome illustrations and beautiful typography, can help feeling the deepest gratitude that American medicine has found such a patron.

The last issue of the *Annals* carries an editorial by Dr. Packard addressed to the magazine's "few subscribers and many readers," in which he sets forth the critical financial situation into which it has fallen due to lack of support by the medical profession, and makes the distressing announcement that unless more subscribers can be secured its publication will, in all likelihood, be suspended. The VIRGINIA MEDICAL MONTHLY believes something should and can be done to avert this calamity. It is urging all the editors of all other state medical journals to join with it in apprising the profession of this situation and in urging them to rally to the support of an undertaking that must not perish. The MONTHLY is putting this matter before the

individual doctors of Virginia and before the component societies of the Medical Society of Virginia in the hope that singly and in groups many new subscribers may be found.

Our Archaic Commitment Form.

The writer has before him the commitment form used by the Virginia State Hospitals for the Care of Mental Patients. The form contains more than 200 questions, consequently it is spread over several closely printed pages. The form has to be executed in duplicate. He would be a speedy interrogator indeed who could complete one of these "Inquisitions," as they are called, in less than an hour. One gets the impression as he reads the questions, arranged apparently with little regard for logical sequence, that the form did not reach its present length through careful revisions. One is tempted to speculate whether as good an arrangement might not have been arrived at by shaking the questions up in a hat. All of this is bad enough, but many of the questions are extremely personal, and seek to bring out information which should not be accessible to public scrutiny. Why for instance is it necessary to inquire of every patient before admission whether or not he is lazy, or has had syphilis, or uses profanity, or what his sexual habits are, or how many miscarriages his wife has had, or whether she is then with child? A copy of this form, it should be stated, is filed in the court house of the county in which the patient lives.

It is understood that a committee of superintendents is now engaged in revising this form because it has been recognized as one of the stumbling-blocks to the speedy commitment of the insane. The VIRGINIA MEDICAL MONTHLY would like to suggest to the committee that it waste no more time over this archaic document. It would do the State of Virginia and the insane great service should it cast its present supply to the fire and recommend to the proper authorities a modern, humane and expeditious method of commitment, such a method as is now in successful operation in the State of Maryland—commitment by certification. All that is necessary with this method is for two physicians to certify to the mental condition of the patient in the presence of a member of the family. Armed with such a simple certificate a member of the family conveys the patient immediately to the hospital where he is promptly admitted.

Teeth For The Bite.

The medical profession of Virginia is well organized for fellowship and for the acquisition and dissemination of scientific knowledge, but it is beginning to dawn upon an increasing number of doctors in the State that organization for another type of work is also imperatively needed. Organized political leaders at present give little heed to organized medicine. Why? Because they do not interpret organized medicine to mean a politically sensitive, cohesive, influential or militant group of the body politic. But the day is rapidly approaching in Virginia when the politicians will have to revise this interpretation. The revision will occur just as soon as doctors as a group begin to exercise their influence and speak with votes. When the politicians learn this, indifference, rebuffs and insults will cease to be their method of dealing with the profession of the State.

When the Medical Society of Virginia becomes politically effective it will have to do many things it is not doing today. Some of them are already being talked about. It has been intimated, for instance, that a bureau will be established through which the Society will seek from all candidates for public office an expression of their attitude toward all matters relating to the public health and the medical profession. This bureau would promptly make public to all physicians in the State the expressed attitudes of candidates concerning these matters. The bureau would keep on file the public records of all State and local officials with particular reference to their attitude toward medicine, their expressions and activities in all matters affecting the public health. The bureau would be expected to keep the doctor's point of view before the public, availing itself of the press, the radio, and public speakers for the purpose. It might even maintain a lobby in the halls of the General Assembly.

Under such a set-up the medical profession would count on being consulted whenever appointments to public office connected with the health of the people were pending. Its voice would be heard when raised in the interests of the correction of abuses or when it pointed the way to progress in matters of public health. Under such a set-up the profession would serve not only its own best interests, but the best interests of the people of Virginia as well.

The Potency of Gilliland Laboratory Products.

Some apprehension was felt in medical and lay circles after a recent newspaper report that there had been collusion between an official of the Pennsylvania Department of Health and a representative of the Gilliland Laboratories in mislabelling and using several lots of diphtheria antitoxin after the expiration of the date originally stamped upon the packages beyond which potency could not be guaranteed. Knowing that the Virginia State Department of Health was a large buyer and distributor of Gilliland products, certain physicians requested the VIRGINIA MEDICAL MONTHLY to ascertain the facts especially as they relate to the distribution of these products in Virginia. In response to our letter of inquiry we are informed by Dr. I. C. Riggin, State Health Commissioner, that:

"Immediately upon receipt of information that there might be some question as to the potency of the diphtheria antitoxin as prepared by the Gilliland Laboratories, we communicated with the National Institute of Health in Washington, D. C., requesting information concerning this matter. We forwarded to the National Institute of Health a sample of each lot of Gilliland diphtheria antitoxin that we had on hand; in addition, I understand that lots were forwarded from other states for testing. We were informed on February 16th as follows:

"'A test of ten current lots of Gilliland diphtheria antitoxin, including one of the samples forwarded by you, has progressed sufficiently for us to say that all the material tested contains a sufficient excess of antitoxin to allow for any normal deterioration between now and the dates of expiration which appear on the labels.

"'We have no reason to question the potency or purity of any of the products put out by the Gilliland Laboratories.'

"I may say that the State Department of Health has had a contract with the Gilliland Laboratories for the past several years and during this period there has been no reason to question the purity or potency of their products. Biologics distributed through the State Department of Health are checked and rechecked and no products are sent out after the expiration date. On the expiration date, all products are returned to the Laboratories.

"The products are standardized in Washington and the firm is licensed. Naturally, they must maintain standards in order to protect this license. I can assure you that every precaution is taken to see that the products distributed by the State Department of Health are up to the required standards, both as to the potency and the purity."

Such a statement should put at rest any uneasiness that might be felt by the doctors of Virginia concerning the reliability of the products in question.

Diphtheria in the Negro.

The Negro has always been regarded as peculiarly susceptible to certain diseases—to syphilis, tuberculosis and the exanthemata, for example. Southern doctors, particularly during the antebellum era, laid great stress upon the diseases to which he was prone, and not a little of early Southern medical literature deals with them. W. D. Weatherford in his book, *The Negro from Africa to America*, gives an interesting catalogue of the diseases to which the slave was susceptible: colic, worms, sores, skin diseases, rickets, goitre, scrofula, diseases of the spine and hip joint, and glandular and nervous disorders. The latest disease to which the Negro can claim undisputed right is, of course, sickle cell anemia.

As he has suffered susceptibility to certain disease, so he has enjoyed natural immunity to certain other diseases. Yellow fever and malaria at once come to mind. In the February issue of the *British Medical Journal*, George Kinneard presents some interesting facts in support of the belief which had already been felt and fairly well established in this country, that diphtheria is a disease toward which the Negro enjoys a high degree of resistance. Quoting statistics from tropical countries to which his own experience in the Bahamas is added, he shows the strikingly lower incidence of the disease among blacks when compared to whites in the same latitudes. Throat cultures reveal the fact that the carrier state exists among both races in about the same proportion, but Schick tests show a significantly high percentage of immunes among colored children—90 per cent as against 62 per cent for white children. Diphtheria then appears to be another illness less terrifying for the Negro, but the fact that he may be a carrier of the disease makes him a menace to the more susceptible white race with which he is thrown into contact especially in the tropics.

Why Patronize Our Advertisers?

The *West Virginia Medical Journal* answers this question so well that we have lifted bodily from its pages the argument that follows:

"If the JOURNAL had no advertising at all, individual members would have to pay the printer's bill. As matters now stand, we have sufficient ad-

vertising to carry us through the year with a fairly comfortable margin of profit. The reason we have a satisfactory volume of advertising is because perhaps one-tenth of the individual members are keenly interested in the success of this publication.

"We do not for a minute urge the members of the association to disregard all other considerations and shop through our advertising columns. But we do urge you to give preference to our advertisers when other considerations are equal. We do not consider this particularly as a patriotic duty to your association. We do consider it as a matter of sound common sense to you. This is your JOURNAL. You write the material which goes into its make-up. The advertisers pay the bill. Why shouldn't you give them preference when you can?

"The doctor who gives no consideration whatever to the JOURNAL advertisers is contributing to a three-way loss. He loses because the JOURNAL belongs to his association. The advertiser loses because he pays for something he does not receive. The JOURNAL loses the revenue. And so we close as we began, 'patronize our advertisers.' We feel that is a sound business proposition."

Department of Clinical and Medical Education of the Medical Society of Virginia

Pediatric Course at South Boston.

The South Boston postgraduate course in Pediatrics, sponsored by the Department of Clinical and Medical Education and The Halifax County Medical Society, began on March 5th with the enthusiastic support of the physicians in the community. Besides a number of visitors the following physicians enrolled for the course:

Dr. I. K. Briggs, South Boston.
Dr. W. L. Eastlack, South Boston.
Dr. J. D. Hagood, Clover.
Dr. W. P. McGuire, Wylliesburg.
Dr. J. A. Owen, Turbeville.
Dr. D. C. Steelsmith, South Boston.
Dr. G. A. Stover, South Boston.
Dr. W. O. Tune, Brookneal.
Dr. C. B. White, Halifax.
Dr. W. L. Williams, Brookneal.

The Clinician for this course is Dr. Samuel F. Ravenel, of Greensboro, N. C., who comes highly recommended from among leading pediatricians in the East.

The class meets twice a week—on Tuesdays and Wednesdays—over a five-week period. At each meeting in the course the Clinician lectures for one hour and uses the second hour for clinical demonstrations and round table discussions. An interesting feature of the course is the consultation service. The clinician devotes out of class hours on the days of the clinics to consultations or examining patients without cost when requested to do so by physicians enrolled in the course.

Other Pediatric Clinics to be Organized.

The Department is prepared to offer several pediatric clinics in other sections of the State during the late spring and early summer months. Physicians are invited to send suggestions for these clinics through their county medical societies to the Executive Secretary of this Department.

Program for Postgraduate Clinics at Medical College of Virginia.

In cooperation with this Department, the Medical College of Virginia will have the following clinics on Tuesday, April 30th, to which physicians throughout the State are invited:

9:30—10:00 A. M.—Etiology and Prevention of Suppurative Diseases of the Lung. *Dr. I. A. Bigger, Professor of Surgery.*

10:00-10:30 A. M.—The Physician's Part in the Control of Venereal Diseases. *Dr. E. L. McQuade, Director of Rural Health Work, State Board of Health and Associate in Preventive Medicine.*

10:30-11:00 A. M.—Prevention of Communicable Diseases. *Dr. Lee E. Sutton, Jr., Associate Professor of Pediatrics.*

11:00-11:30 A. M.—Contraceptive Technique. *Dr. H. Hudnall Ware, Associate Professor of Obstetrics.*

11:30-12:00 M. —Convalescence from a Preventive Standpoint. *Dr. William H. Higgins,, Professor of Clinical Medicine.*

12:00-12:30 P. M.—Dangers Incident to the Use of Certain Drugs. *Dr. Harvey B. Haag, Professor of Pharmacology.*

12:30- 2:00 P. M.—Luncheon, Cabaniss Hall, as guests of college.

2:00- 4:00 P. M.—Ward Rounds, or Outpatient Clinics, as desired.

4:00- 5:30 P. M.—Round Table Discussion: Subject, Medical Economics. Discussion led by *Dr. C. C. Coleman, Professor of Neurological Survey.*

GEORGE B. ZEHMER,
Executive Secretary.

Proceedings of Societies

The Postgraduate Medical Society of Southern Virginia

Held its annual meeting in the City Point Inn at Hopewell, February 26th.

The Society is a component part of the Medical Society of Virginia, comprising the counties of Nottoway, Dinwiddie, Prince George, Greenesville, Brunswick, Surry, Sussex and Lunenburg, and the cities of Petersburg and Hopewell.

Due to the unavoidable absence of Dr. W. D. Prince, of Stony Creek, the retiring president, the meeting was presided over by Dr. E. W. Young, of Petersburg.

Dr. H. E. Whaley, of Victoria, was elected president for the coming year; Dr. J. A. B. Lowry, of Crewe, and Dr. R. H. Manson, of McKenney, vice-presidents; Dr. C. E. Martin, of Emporia, secretary-treasurer, and Dr. Wright Clarkson, of Petersburg, chairman of the Steering Committee.

Dr. J. B. Jones, of Petersburg, was elected a member of the Public Health and Legislative Committee; Dr. L. S. Early, of Petersburg, was elected chairman and Dr. S. E. Gunn, of Hopewell, and Dr. C. T. Jones, of Petersburg, were elected members of the Board of Censors.

A very interesting scientific program was given during the afternoon as follows:

Vitamins and their Place in Medicine—Dr. S. E. Gunn, Hopewell.

A Symposium on Poliomyelitis (Infantile Paralysis)—Drs. Mason Romaine, W. M. Bowman, Leta White and W. B. McIlwaine, all of Petersburg.

Chronic Colitis—Dr. C. E. Martin, Emporia.

Influenza, its Complications and Sequelae—Dr. C. T. Jones, Petersburg.

Following the scientific program a delightful dinner was given in the dining hall of the City Point Inn.

Warwick County Medical Society.

At the meeting of this Society, held on February 11th, Dr. James T. Tucker, Richmond, gave a paper on "The Newer Treatment of Crushing Injuries of the Spine." This discussion was opened by Dr. Joseph T. Buxton, followed by Dr. H. G. Longaker, Dr. R. A. Davis, and Dr. Thomas M. Wood, Jr. A short business session was held before adjournment.

The following are officers of this Society for 1935: President, Dr. George G. Hankins; vice-president, Dr. Edward L. Alexander; secretary and treasurer, Dr. Thomas N. Hunnicutt, Jr.; Board of Censors, Drs. Samuel Downing, H. G. Longaker, R. A. Davis, W. S. Snead, and B. R. Gary; and Insurance Trustee, Dr. Clarence Porter Jones. All of the above named officers are from Newport News.

The Hanover County Medical Society

Held a reorganization meeting on February 22nd. Dr. I. K. Redd, Ellerson, was elected president, and Dr. J. T. Booth, Ashland, secretary. Practically all physicians in the county—about sixteen in number—are members of this Society.

Albemarle County Medical Society.

At the monthly meeting of this Society held on January 3rd, the following officers were elected: President, Dr. W. E. Brown, Sanatorium; vice-president, Dr. R. T. Ergenbright, Charlottesville; and secretary-treasurer, Dr. Kenneth F. Maxcy (re-elected), University.

Alleghany-Bath County Medical Society.

At a recent meeting of this Society, held in Covington, Dr. N. B. Jeter, of that place, was elected president for 1935; Dr. A. D. Tyree, Clifton Forge, vice-president; and Dr. R. P. Hawkins, also of Clifton Forge, secretary-treasurer (re-elected). Guest speakers for this meeting were Drs. J. B. Nicholls, and L. R. Broome, of Catawba Sanatorium, and Dr. I. C. Riggin, State Health Commissioner. There were approximately thirty doctors in attendance.

Dr. Jeter, the new president, was last fall appointed Alleghany County Coroner, to fill the vacancy caused by the death of Dr. H. W. Anderson who served in that capacity for many years.

Bedford County Medical Society.

At its last quarterly meeting, this Society re-elected Dr. C. H. Bondurant, president, and Dr. J. A. Rucker, secretary-treasurer. Both are of Bedford, Va. The next meeting is to be held in April.

Fredericksburg Medical Society.

The February meeting of this Society was a joint one with the dentists of that city, the public being invited to attend. Dr. G. B. Harrison, president, presided. Dr. John E. Cole, of the Program Committee, announced that the purpose of this meeting was to establish better relations between doctors and dentists and the public. Dr. Andrew Bolling, a dentist, read a paper on "Focal Infection of the Teeth," and Dr. W. C. Walters gave a paper on "Oral Infections with Its Relation to Infectious Diseases." Other papers presented were "Treatment of Trench Mouth" by Dr. J. Minor Holloway; "Relations of Patients to Doctors and Doctors to Patients" by Dr. W. A. Harris; and "Enlarged Prostate, Its Prevention and Treatment to Prevent Operation" by Dr. G. B. Harrison.

The March meeting of this Society was devoted to a review of current medical literature, the abstracts of which were prepared by Dr. C. A. Nunnally.

The tentative program of meetings calls for a showing of films on cancer at the April meeting and another semi-public meeting in May, the object of which is to hold a symposium on matters concerning public health. City officials and the public will be invited.

Dr. Thomas B. Payne, Fredericksburg, is secretary of this Society.

The Southside Virginia Medical Association

Held its quarterly session in Petersburg, March 12th. The following program was given: Glomus Tumor by Dr. J. Shelton Horsley, Richmond; The Use of the Well Leg Splint in Treatment of Fracture of the Hip by Dr. J. B. Dalton, Richmond; Compressed Fractures of the Spine by Dr. H. P. Mauck, Richmond; The Treatment of Acute Head Injuries by Dr. R. F. Slaughter, Norfolk; The Early Diagnosis, Prevention and Treatment of Whooping Cough by Dr. Ambrose McGee, Richmond; and The Management of Pregnancy Complicated by Chronic Nephritis by Dr. H. Hudnall Ware, Jr., Richmond.

No business session was held. After the scientific program, the doctors were entertained by a dinner at the hospital.

Dr. S. E. Gunn, Hopewell, is president of this Association and Dr. R. L. Raiford, Franklin, is secretary.

Virginia Peninsula Academy of Medicine.

At a meeting at the James River Country Club on February 18th, the physicians of the Virginia peninsula organized the Virginia Peninsula Academy of Medicine, and the following officers were elected: President, Dr. Edward L. Alexander, Newport News; vice-president, Dr. Robert H. Wright, Jr., Phoebus; and secretary-treasurer, Dr. Frank S. Bacon, Hampton.

The second meeting of the Academy was held at the Hampton Roads Country Club on March 18th.

Lynchburg Academy of Medicine.

At the February meeting of the Academy, Dr. W. W. S. Butler, Roanoke, presented a paper on "Some Interesting Genito-Urinary Cases," presenting several cases of polycystic kidneys, and some problems in transurethral prostatic resection.

At the meeting on March 4th, Dr. Stuart Michaux, Richmond, presented a very interesting address, illustrated with lantern slides, on "The Etiology and Treatment of Cystocele and Uterine Prolapse, with especial reference to the Watkins-Wertheim Method of Treatments." A discussion by members followed.

The officers of the Academy are: President, Dr. W. C. Adkerson; vice-president, Dr. J. H. Rawlings; and secretary-treasurer, Dr. John Hundley, Jr.

Norfolk County Medical Society.

At the regular meeting of this Society on March 11th, Dr. Edwin P. Lehman, University, Va., gave an address on "Cerebral Injuries," following which there was an interesting and instructive discussion by some of the members.

The Roanoke Academy of Medicine

Held its regular meeting at the Elks Club, March 4th. At this time the following scientific program was presented: Strychnine Poisoning Treated with Avertin, by Dr. Ira H. Hurt; and Vitamine D Milk by Dr. Gerald C. North, of New York City.

News Notes

Norfolk Committee of Arrangements.

The Norfolk County Medical Society is looking ahead and already preparing for an interesting meeting of the Medical Society of Virginia in Norfolk, October 15th, 16th, and 17th. The Committee in charge of Arrangements for the meeting is composed of Dr. Wm. Lett Harris, and Drs. Frank Redwood, F. C. Rinker, Walter B. Martin, Claiborne Willcox, and B. R. Kennon.

McGuire Lectures.

Dr. Gunnar Nyström, distinguished professor of surgery, Upsala University, Sweden, will give the Stuart McGuire Lectures for the Medical College of Virginia, on Monday night, April 29th, and Tuesday night, April 30th, in the auditorium of the Richmond Academy of Medicine Building, Twelfth and Clay Streets, this city.

His subjects will be "Embolism of the Arteries of the Extremities" and "Pulmonary Embolism."

The profession is cordially invited to these lectures and to the spring clinics scheduled in combination with the lectures during the day of Tuesday, April 30th. The program for the clinics will be found in this issue under the Department of Clinical and Medical Education.

The District of Columbia-Maryland-Delaware-Virginia-West Virginia Sectional Meeting, American College of Surgeons,

Will be held in Washington, D. C., on Thursday and Friday, April 11th and 12th. Headquarters will be at the Mayflower Hotel. A number of distinguished visitors will be present on this occasion.

An active Committee on Local Arrangements, with Dr. Ralph M. LeComte as Chairman, and Dr. Elijah W. Titus as Secretary, has plans well in hand for an excellent meeting.

Following is a preliminary outline of the entire program:

THURSDAY, APRIL 11, 1935

8:00- 9:00—Registration.
9:00-12:00—Operative Clinics.
9:30-12:00—Hospital Conference.
12:30- 2:00—Medical Motion Pictures.
2:30- 5:00—Hospital Conference.
5:00- 5:30—Annual Meeting, Fellows of the College.
7:00- 8:00—Medical Motion Pictures.
8:00-10:30—Scientific Session, General Surgery.
8:00-10:30—Scientific Session, Eye, Ear, Nose and Throat Surgery.
8:00-10:30—Hospital Round Table Conference.

FRIDAY, APRIL 12, 1935

9:00-12:00—Operative Clinics.
9:00-11:00—Cancer Clinic.
9:30-12:00—Hospital Conference.
12:30- 2:00—Medical Motion Pictures.
2:30- 5:30—Scientific Session, General Surgery.
2:30- 5:30—Scientific Session, Eye, Ear, Nose and Throat Surgery.
2:30- 5:00—Hospital Conference.
8:00-10:00—Community Health Meeting.

A cordial invitation to attend this most interesting meeting is extended not only to the Fellows and hospitals of the various states included, but to the entire medical profession at large.

Directors of Health Units in Virginia.

In addition to names of directors of health units in Virginia, given in the last issue of the MONTHLY, the following appointments have been announced by the State Health Department:

Dr. William F. Wild has been appointed director of the Isle of Wight-Nansemond-Suffolk Health District, effective March 1st, with headquarters in Suffolk. He succeeds Dr. C. H. Dawson who was recently transferred to the new Peninsula Health District with headquarters in Williamsburg.

Dr. Albert B. McCreary has been appointed director of the Northampton County Health Unit, with headquarters in Eastville. He entered upon his duties on March 1st.

The South Piedmont Medical Society

Will hold its spring meeting in Danville, Va., on April 23rd. At this time there will be a symposium on "Medical Economics," in addition to the volunteer papers. Dr. George A. Stover, South Boston, is president, and Dr. John A. Owen, Turbeville, secretary.

Heads of Local Health Council

Dr. C. L. Outland, medical director of the Richmond Public Schools, has been elected chairman of the Health Council of the Council of Social Agencies of Richmond, Va., for the coming year. Dr. Ennion S. Williams is vice-chairman, and Mrs. Marion Dettelbach continues as secretary.

The West Virginia State Medical Association

Is to hold its annual meeting at Wheeling, on May 6th, 7th, and 8th, under the presidency of Dr. R. H. Walker, of Charleston. There will be an interesting program of papers and clinics. Dr. Irvin Abell, Louisville, Ky., has accepted an invitation to give an address on a surgical subject, and Dr. Morris Fishbein, editor of *The Journal of the American Medical Association* will give an address at the banquet and also at a general session.

Dr. James V. Bickford

Has located in Norfolk Va., with offices in Medical Arts Building, where he is engaged in the practice of pediatrics. Dr. Bickford is a graduate of Johns Hopkins Medical School in 1929, and has spent the past five years before locating here in hospital and research work, including services in Baltimore, St. Louis and New York, and in training at the Rockefeller Institute of Medical Research.

Dr. J. M. Emmett,

Chief surgeon at the C. & O. Hospital, Clifton Forge, Va., recently addressed the Magic City Medical Society at Burrell Memorial Hospital, Roanoke, Va., his talk being on the early diagnosis of cancer. This Society is composed of Negro physicians from Roanoke, Salem, Radford, Lynchburg, Martinsville, and Pulaski.

Medical College of Virginia News.

Faculty changes and additions in the major faculty for the session 1935-36 are:

Dr. Fred M. Hodges, Professor of Clinical Radiology.
Dr. Daniel D. Talley, Professor of Clinical Radiology.
Dr. Harry Walker, Assistant Professor of Medicine.
Dr. I. C. Riggin, Lecturer in Preventive Medicine and Public Health.
Dr. A. O. James, Professor of Clinical Dentistry.
Dr. S. F. Bradel, Assistant Professor of Crown and Bridge Prosthesis and Dental Metallurgy and Superintendent of the Infirmary.
Dr. Herman P. Thomas, Associate Professor of Economics and Sociology.

Dr. Lawrence T. Price has been made emeritus professor of clinical genito-urinary surgery. Dr. Price was a valued member of the faculty for thirty years prior to his retirement last year.

The Saint Philip Hospital Postgraduate Clinic for Negro physicians, as conducted annually by the college, will run from June 17 to June 29, 1935. Other states than Virginia have been represented in the registration for these clinics which have come to be so popular that enrollment is limited.

News from the University of Virginia, Department of Medicine.

At the meeting of the University Medical Society on February 6th Dr. Tiffany J. Williams was elected president and Dr. Alfred Chanutin, secretary, for the coming year. The retiring officers were Dr. John Henry Neff, president, and Dr. J. E. Kindred, secretary.

On February 25th Dr. Finley Gayle, Jr., of Richmond, Va., spoke before the University of Virginia Medical Society on Selective Human Sterilization.

On February 22nd Dean J. C. Flippin spoke before the local Chapter of Sigma Xi on the subject of Recent Trends in Medicine.

On February 19th Dr. H. B. Mulholland addressed the Staff of the Martha Jefferson Hospital on The Modern Treatment of Diabetes Mellitus.

On March 6th Dr. Kenneth Maxcy and Dr. J. Edwin Wood spoke before the Sullivan and John-

son Counties Medical Society at Kingsport, Tenn., on the subject of Rheumatic Fever.

Dr. Wilson G. Smillie, Professor of Public Health at the Harvard Medical School, visited the Medical School on March 10th.

Dr. Edwin Lehman and Dr. W. H. Parker spoke before the Norfolk Academy of Medicine on March 11th on the subject of Cerebral Trauma.

On March 11th Dr. D. C. Smith spoke before the Albemarle Medical Society on Skin Fungi.

News from Duke University School of Medicine and Duke Hospital.

On February 11th Dr. W. L. Bierring, President of the American Medical Association, addressed the Durham-Orange County Medical Society at their regular monthly meeting, at Duke Hospital.

On March 11th Dr. Wilson G. Smillie, of the Harvard School of Public Health, lectured to the students and staff on Common Colds.

Mr. C. K. Allen, Warden of Rhodes House, Oxford, England, successor of Sir Francis Wylie, visited the medical school and hospital March 18th and 19th.

The following senior students were elected to Alpha Omega Alpha during the autumn quarter: Miss Julia M. Jones and Mr. H. Stokes Munroe, Jr.

Southeastern Surgical Congress.

At the annual meeting of the Congress in Jacksonville, Fla., in March, Dr. William D. Haggard, Nashville, Tenn., was formally installed as president for the coming year, and New Orleans, La., was selected as the 1936 place of meeting. Dr. C. Jeff Miller, New Orleans, was named president-elect. Virginians on the program at the Jacksonville meeting were Drs. J. Shelton Horsley and I. A. Bigger, both of Richmond.

Dr. Edwin A. Harper,

Of Bedford, Va., who graduated from Harvard Medical School in 1931, has just opened offices in Lynchburg, Va., at 619 Church Street, for the practice of pediatrics. For the past three years, Dr. Harper has been medical house officer in The Children's Hospital, Boston, Mass.

Dr. R. M. DeHart,

Recently of Floyd, Va., where he has been operating a hospital for the past three and a half years, has closed this institution and moved to Christiansburg, Va., where he is now associated with Dr. A. M. Showalter on the surgical staff of the New Altamont Hospital.

Dr. John Harris Smith, an alumnus of the Medical College of Virginia, class of '34, has taken over Dr. DeHart's practice at Floyd. Dr. Smith served an undergraduate internship at Sheltering Arms Hospital, Richmond, and had been at Lewis Gale Hospital, Roanoke, Va., since last July.

Dr. Elbyrne G. Gill,

Roanoke, Va., a director of the Lions International, was the principal speaker at a district conference of the Lions clubs in Petersburg, Va., March 6th.

Dr. Howard M. Starling,

Class of '31, Medical College of Virginia, who has recently been at Lenox Hill Hospital, New York City, went to City Memorial Hospital, Winston-Salem, N. C., on March 1st, as resident physician.

Warning!

Doctors are warned to be on the look-out for a man claiming to be a representative of the Associated Importing Factors of New York City. This company is no longer in business, and the man has been selling desk pads, chair covers, etc., collecting the money in advance with the promise of having the articles sent postage free. He has been using the name of G. A. Thompson, is about forty-five years of age, about six feet tall, and has blue eyes and brown hair. Anyone seeing this man is asked to get in touch with their local police department.

C. & O. Hospital to Build Annex.

Work will soon be started on a fifty-bed annex to the Chesapeake and Ohio Railroad Hospital in Clifton Forge, Va. The present one-hundred bed hospital will be renovated and modernized in keeping with the annex, and a modern hydrophysiotherapy department will be installed.

The history of this hospital dates back about forty years. When Gladys Inn was completed in

1896, the building, which had been the hotel since the early boom days of Clifton Forge, was converted into a hospital. The late Dr. John C. Wysor was chief surgeon. In 1913, the old building was razed and the present hospital was erected. Dr. B. B. Wheeler succeeded Dr. Wysor, and was, in turn, succeeded by Dr. J. M. Emmett, who has served as chief of staff since 1920.

The American Association on Mental Deficiency

Will hold i s annual meeting at the Hotel Palmer, Chicago, on April 25th, 26th, and 27th. The Thursday and Friday sessions will be devoted to studies on Mongolism; Birth Injury as an Etiological Factor in Mental Deficiency; Mental Disorders in Mental Deficiency; The Problem of Sterilization; Defective Delinquency and its Relation to Penal Institutions; Community Supervision of the Paroled Mental Defective; and Newer Methods in Institutional Training for Community Life. The Saturday session, on April 27, will be devoted to the sociological, psychological, and the special educational aspects of Mental Deficiency.

Physicians are cordially invited to attend these sessions. Complete data on the program may be obtained from the Secretary, Dr. Groves B. Smith, Godfrey, Ill.

Dr. Hugh H. Trout,

Roanoke, Va., recently gave a talk on the medical profession in the first of a series of vocational guidance conferences which are being sponsored by the Virginia Tech Y. M. C. A., Blacksburg, Va.

Dr. D. Hunter Marrow,

After spending the winter at Daytona Beach, Fla., has returned to his home at Boydton, Va., for the summer.

Dr. E. V. Richardson,

Who has been practicing for some time at Glade Spring, Va., announces his removal to Marion, Va.

Dr. Duncan R. McEachern,

Of the class of '32, Medical College of Virginia, who interned at the Hospital Division of the Medical College of Virginia and later served a year at the American Hospital in Paris, has located for general practice at Wilmington, N. C., with offices in the N. C. Bank and Trust Building.

Dr. McEachern was married to Miss Eloise Shepherd, of Richmond, Va., on January 23rd.

Dr. David W. Kelly, Jr.,

Culpeper, Va., was recently elected post surgeon of the Culpeper Post, Veterans of Foreign Wars, for the coming year.

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Obituary Record

Dr. Edward Randolph Turnbull,

Lawrenceville, Va., died at his home in that place on March 20th, after having been in ill health for several months. He was a native of Brunswick County, Virginia, and seventy-eight years of age. His medical education was received at the University of Virginia from which he graduated in 1884. Shortly thereafter he located in Lawrenceville where he had since made his home and practiced until a few months ago. For a number of years he was a member of the Brunswick County School Board and also county health officer. Dr. Turnbull had been a member of the Medical Society of Virginia for forty-two years. He is survived by his wife and

two children, one of them being Dr. Randolph B. Turnbull, of Blue Ridge Sanatorium, Va.

Dr. Frank Waring Lewis,

Well known pediatrician of Richmond, Va., died March 2nd, after an illness of two months. He was a native of Litwalton, Va., and was forty-six years of age. Dr. Lewis graduated from the Medical College of Virginia in 1913. He had been practicing in Richmond for the past ten years and had been a member of the Medical Society of Virginia since 1926. His wife and three children survive him.

Dr. Howe Alexander Jordan,

Big Island, Va., died March 13th. He was eighty-two years of age and a graduate of the College of Physicians and Surgeons, Baltimore, in 1879. He had been a member of the Medical Society of Virginia for the past eighteen years. His wife and three children survive him.

Dr. John Davis Dabney Ware,

Baltimore, Md., died February 23rd, from complications following an attack of influenza. He was thirty-two years of age and graduated from the University of Virginia, Department of Medicine, in 1929. Dr. Ware was specializing in ear, nose and throat diseases at Johns Hopkins Hospital. He had been a member of the Medical Society of Virginia for five years.

Dr. Franklin H. Martin,

Well known throughout the country as director-general of the American College of Surgeons, died March 7th of coronary thrombosis. He was a native of Wisconsin and seventy-seven years of age. Dr. Martin's most significant work began with the establishment of *Surgery, Gynecology and Obstetrics* in 1905. This was responsible for the formation of the Clinical Congress of Surgeons in North America in 1910 and later the American College of Surgeons in 1913. Dr. Martin was very active in medical administrative work during the World War and was Colonel in the Medical Corps of the U. S. Army. He was the recipient of honors and recognition from many places and had had several decorations bestowed upon him by foreign countries. Dr. Martin was also the founder and leader of the Gorgas Memorial Institute of Tropical and Preventive Medicine.

Dr. John Ruhrah,

Internationally known pediatrician died in a Baltimore hospital, March 10th. He had been a patient there since early in January. Dr. Ruhrah was a native of Ohio and was sixty-two years of age. He was formerly president of the American Pediatric Society and also the Medical Library Association and served as secretary of the Medical and Chirurgical Faculty of Maryland for ten years and its president in 1919.

Resolutions on Death of Dr. J. G. Davis.

At a called meeting of the Board of Directors of the New Altamont Hospital, on February 23rd, the following resolution was presented and unanimously adopted:

WHEREAS, God in His infinite wisdom has deemed it wise to take from our midst our beloved and efficient co-worker, Dr. J. G. Davis, Jr., and

WHEREAS, We as a Board of Directors shall miss his valuable counsel and services, not only now, but for the continued future, and

WHEREAS, We recognize his many valuable qualifications as a physician, friend and Director of the New Altamont Hospital, and

WHEREAS, We fully recognize the significant loss to this institution and deeply sympathize with his family in their personal loss. Therefore, be it

RESOLVED, That we, as a Board of Directors, hereby assemble ourselves together to express to his family and friends in this community our sincerest sympathy, and with the hope that in some way the cloud of sorrow which now surrounds their lives will soon be replaced by the sunlight of joy and happiness.

That a copy of this resolution be spread on the minutes of the Board of Directors of the New Altamont Hospital, a copy be presented to his families in both Christiansburg and Roanoke, and a copy presented to the daily papers for publication.

JULIUS GOODMAN,
JAMES RIGBY,
W. H. BAKER,
W. S. SNIDOW,
C. S. CHARLTON,
PAUL FOSTER,
A. M. SHOWALTER,
MRS. A. M. SHOWALTER.

Resolutions on Death of Dr. Schenck.

It becomes our duty at this time to record the death of Dr. Powhatan Stanley Schenck, an honorary member and past president of the Norfolk County Medical Society.

Dr. Schenck was intimately associated with the medical, but particularly the public health activities of Norfolk, having served as Health Commissioner from 1910 until his death, although during the last four years failing

health had made necessary his retirement from active work. During his earlier years of practice he served for a time as City Physician, though until his appointment as Health Commissioner he had been engaged in private practice, in which he acquired a large following of patients and friends.

The present organization of the Norfolk Health Department was developed very largely during the twenty years in which Dr. Schenck was in active control. At this time forces and developments were at work which vitalized this service throughout the country and it was his special contribution which kept Norfolk City in the forefront in public health work. His unusual capabilities as an executive contributed greatly to its success. Dr. Schenck was a pioneer in this field of public health service and it was during his term of office that immunization, school inspection, milk control, mosquito eradication and recreational facilities were added to quarantine control, contagion and other matters which was the work of the department at that time.

Dr. Schenck was an honorary member of the Norfolk County Medical Society, formerly a member of the Medical Society of Virginia, and a fellow of the American Public Health Association.

We cannot leave this duty with a mere statement of facts of his life and work, although they record an admirable, useful and successful life's work, for the members of this committee and a large number of others who had the privilege of being intimately acquainted with his personality knew him as kindly, companionable and lovable gentleman who will continue to live as such in their memories. Therefore,

BE IT RESOLVED: 1. That in the death of Dr. Powhatan Stanley Schenck the Norfolk County Medical Society and the City of Norfolk have lost a valuable and distinguished member and citizen.

2. That our deepest sympathies be extended to his bereaved family.

3. That a copy of these resolutions be spread on the minutes of the Society, and also sent to his family, and be published in the VIRGINIA MEDICAL MONTHLY.

C. J. ANDREWS,
J. WARREN WHITE,
FRANK HANCOCK,
Committee.

Resolutions on Death of Dr. Whitehead.

Robert Camden Whitehead was born at Amherst, Virginia, August 11, 1878. He was the son of Colonel Thomas and Martha Garland Whitehead.

He received his preliminary education in the public schools of Amherst County, and then entered Randalph-Macon College, where he pursued his studies for three years.

After the death of his father Colonel Thomas Whitehead, he entered the newspaper field and for some years was associated with a leading newspaper of this city, also the Everett Waddey Company, of Richmond.

In 1902 he entered the University College of Medicine, in Richmond, and graduated in 1905. After receiving his degree, he located in West Virginia but again returned to his home at Amherst in 1909, where he practiced until locating in this city in 1912. Here he continued general practice until 1918, when he became associated with Dr. R. L. Payne, Sr., and Dr. R. L. Payne, Jr. At this time he began to confine his work to internal medicine, a field in which he soon became recognized. He was a member of the staff of the Norfolk Protestant Hospital and of St. Vincent's Hospital.

Dr. Whitehead was a keen student and had an absorbing interest in the scientific problems of his profession. His papers read before this Society were heard with pleasure and respect. His fellow physicians had the highest regard for his diagnostic skill and clinical judgment.

Dr. Whitehead touched the cultural life of the community at many points, but he will probably be best remembered for his love of music. He was one of the founders of the Norfolk Symphony Orchestra and was largely responsible for its success.

In the death of Dr. Whitehead, the Norfolk County Medical Society has lost one of its most loyal members. Therefore,

BE IT RESOLVED: 1. That the Norfolk County Medical Society wishes to record its high regard for Dr. Whitehead as an honored member of our profession and a distinguished citizen of this community.

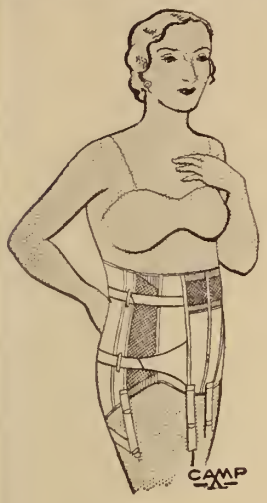
2. That we wish to express our deepest sympathy to his bereaved family.

3. That these resolutions be entered in the minutes of this Society, a copy be sent to Dr. Whitehead's family, and a copy to the VIRGINIA MEDICAL MONTHLY.

H. M. DOLES,
B. E. HARRELL,
R. L. PAYNE,
Chairman.

Dr. James Hunt Royster.

As we go to press, we have been advised of the sudden death of Dr. Royster, due to a heart trouble. Notice will appear in our next issue.



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Proc. Soc. Exp. Biol. and Med., 1934, 32, 241-245★

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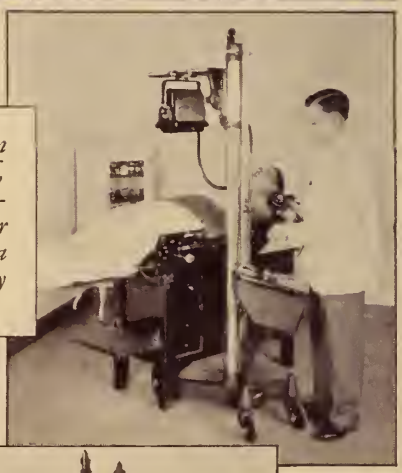

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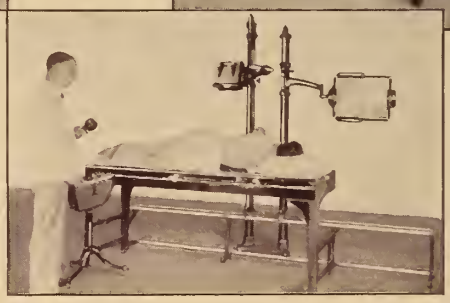

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PROGRESS IN RADIOLOGY

The following question was recently submitted by the Editor to a number of American roentgenologists: "What do you consider the three most significant advances in the field of X-ray and radium therapy in the past ten years?" The MONTHLY believes their answers will prove as interesting to its readers as did the answers to similar questions relating to other specialties published here from time to time.

1. The introduction of cholecystography;
2. Intravenous pyelography;
3. Supervoltage roentgen therapy.

—Lawrence Reynolds, Detroit, Michigan.

1. Excretion urography;
2. The establishment of the international r (roentgen) unit;
3. The introduction of filtered radon seeds.

—Leopold Jaches, New York, N. Y.

1. Diagnostic Roentgenology—Introduction of cholecystography by Evarts Graham and his colleagues.
2. Roentgen Ray Therapy—Coutard's demonstration of the importance of low minute intensity and high total dose in the irradiation of neoplasm.
3. Radium Therapy—Dominici's and Regaud's establishment of the importance of thick platinum filters to filter out not only the beta radiation but also the softer rays in the gamma series.

—Paul C. Hodges, *University of Chicago,* Chicago, Ill.

1. The development of cholecystography;
2. The use of higher voltages and an increased knowledge and skill in the application of X-rays for treatment;
3. The more extensive use of large radium packs.

—G. W. Grier, Pittsburgh, Pa.

1. The discovery of cholecystography;
2. The development of intravenous urography;
3. The institution of the American Board of Radiology.

—B. R. Kirklin, *Mayo Clinic,* Rochester, Minn.

1. Discovery of cholecystography by Graham, Cole and Copher;
2. Intravenous urography by Von Licktenberg and Swick;
3. The improvement in high voltage X-ray therapy.

—Charles A. Waters, Baltimore, Md.

1. The universal acceptance of the standard r unit—result, order out of chaos in therapy;
2. Tube, screen, and film improvement—result, more accurate roentgenograms;
3. Rapid development of artificial contrast procedures (gall bladder, brain and meninges, bronchial tree, genito-urinary tract)—result, marked broadening field of usefulness for X-ray methods.

—Fred J. Hodges *University of Michigan,* Ann Arbor, Mich.

1. The development of the gold radon seed;
2. The platinum weak radium element needle;
3. The Coutard multiple dose X-ray technic.

—Charles L. Martin, Dallas, Texas.

1. The brilliant results obtained in the skillful application of X-ray and radium therapy in the treatment of carcinoma of the uterus;
2. The great advances that have been made in the irradiation of carcinoma of the breast;
3. The combined intravenous and retrograde urography.

—G. E. Pfahler, Philadelphia, Pa.

1. The introduction into the blood stream of substances which are opaque to X-ray and which will be secreted by the organ to be examined. (Urography);
2. The acceptance of the roentgen (r) as the unit of X-ray dosage, and the development of the divided dose method. (Coutard);
3. The development of blood vessel radiography.

—George W. Holmes, *Harvard Medical School,* Boston, Mass.

I. STERILITY.*
II. THE HORMONES IN GYNECOLOGY.*

EDWARD H. RICHARDSON, M. D.,
Baltimore, Md.†

It is evident that your Program Committee exercised discriminating judgment in choosing the two subjects which I have been invited to discuss this evening, since both of them are of interest not only to gynecologists, but they also obtrude themselves with monotonous regularity upon the attention of those engaged in almost every other major subdivision of clinical medicine.

I. STERILITY

First, let us consider the problem of sterility. It is one of far-reaching importance both because of its surprising prevalence and by reason of the fact that so many and such varied factors enter into its causation. The best available statistics are pretty well in agreement and show that at least 10 per cent of present-day marriages are involuntarily barren; which means that in the United States today there are 2,000,000 childless couples still within the age of reproduction who earnestly desire offspring.

It is well at the outset, perhaps, to familiarize ourselves with certain definitions and descriptive terms commonly employed by writers upon this subject.

Meaker's simple definition of sterility as "inability to initiate the reproductive process" is a good one, because it properly implies the possibility of either individual or joint responsibility in the mating.

Absolute sterility means the existence of conditions which prevent the possibility of pregnancy. It may be brought about by a total cessation of gametogenesis in either sex, on the one hand, or by insurmountable obstacles to fertilization. Such an unfortunate situation may be either temporary or permanent depending entirely upon whether the factors responsible are amenable to any form of remediable therapy.

Relative sterility and relative fertility are synonymous terms which imply that while pregnancy is possible, hindrances of varying degrees of severity exist; hence they include all grades from absolute sterility to absolute fertility.

Primary sterility signifies that pregnancy has never occurred; the congenital variety is usually absolute because of defective development, whereas in the acquired form prohibitive factors, such as closure of the tubes or destruction of the gonads, antedate the possibility of pregnancy.

Secondary sterility embraces all cases occurring from any cause whatsoever after one pregnancy. One-child sterility is a special form of this type.

Physiologic sterility exists prior to puberty and after the menopause due, of course, to the absence of ovulation. This latter function is inhibited also during pregnancy by means of hormones supplied by the corpus luteum, the hypophysis and the placenta. From the seventh to the fourteenth day of the menstrual cycle is the optimum time for pregnancy to occur. But the popular belief that there is a so-called safe period in each cycle during which a woman is immune against pregnancy is entirely fallacious. It is true, however, that the degree of fertility or of susceptibility to conception is influenced by many factors and is subject to wide variation in the individual woman. Such factors include the brief span of viability of both the ovum and the spermatozoon; the reduced fertility which exists during lactation, although pregnancy may occur in a lactating woman even prior to the resumption of menstruation; irradiation of the pelvic contents by either roentgen rays or radium; sudden and decided changes of climate; dietary deficiencies, general debility and undernutrition; and, finally, the possibility of non-ovulating cycles, especially during the pre-menopausal years.

Let us now consider the minimal physiologic requirements which must be met in order that a normal pregnancy may occur. They are (1) that a normal, actively motile spermatozoon, capable of propelling itself over the full length of the uterine cavity and two-thirds of the length of the fallopian tube, must be delivered inside the external os; (2) that here it must encounter congenial chemical en-

*Read by invitation before the Hartford Medical Society, Hartford, Conn., May 7, 1934.

†From the Department of Gynecology of the Johns Hopkins University and Hospital.

vironment; (3) that patency must exist from the external os to the fimbriated end of the tube; (4) that a normal ovum must have found its way across the tubo-ovarian hiatus and into the tube where fertilization must be consummated; (5) and that the fertilized ovum must migrate into the uterine cavity and there become implanted upon a suitably prepared endometrium.

It at once becomes apparent, therefore, that discovery of the factors responsible for a barren mating requires a careful and detailed investigation into the reproductive status of both parties involved. But since the problem of male sterility more properly belongs to the genitourinary specialist, I shall not trespass further upon his domain in this discussion than to emphasize the importance of enlisting his full cooperation in a joint effort to bring about therapeutic success. When it is recalled that childless marriages are directly attributable to male sterility in fully one-third of the total incidence and, further, that female sterility is in large measure traceable to gonorrheal infection acquired from male consorts, nothing more need be added to stress the necessity in every sterile union of a searching inquiry into the potency of the husband by one thoroughly competent to conduct such a study. And competency in this respect, permit me to remind you, signifies vastly more than the ability to report accurately upon microscopic examination of fresh specimens of semen.

ETIOLOGY

The etiological factors concerned with female sterility are more numerous, more complex and varied and often more elusive than are those encountered in the male. For convenience of presentation and discussion I shall utilize an antogether practical classification of them:

1. *Developmental Deficiencies.*—These occur in every unit of the reproductive system. True infantilism is relatively rare, but when it is encountered one usually finds pronounced inferiority of the entire sexual apparatus, so that there is no possible escape from permanent and absolute sterility.

Of much more frequent occurrence are the varying grades of hypoplasia, characterized by a short and tight vagina; a long rigid cervix with a pinhole os and a narrow canal which may be effectively blocked by tenacious mucus; a small firm and, more often than not, acutely anteflexed uterine corpus; fallopian tubes which are of smaller caliber and shorter than normal; and ovaries which are distinctly smaller and firmer than the average and which present a striking paucity of follicles. Many of these women are otherwise well-developed and seem particularly attractive to the opposite sex, because they comprise a considerable quota of those seeking escape from barrenness. Frequently, however, they are sexually indifferent or actually frigid, and they uniformly suffer from functional menstrual disturbances.

Imperforate hymen is an occasional obstacle, while actual stenosis of the cervix is a frequent offender in this group.

2. *Infections.*—These constitute by far the largest single class in every tabulated list of causative factors. Even in infancy and early childhood the exanthemata may produce cicatricial occlusion of the vagina, while the disgraceful prevalence of innocently acquired gonorrhea in female children is undoubtedly responsible for many closed tubes and stenosed cervices. In adult life, also, gonorrhea is the arch offender. Even if the unfortunate victim is lucky enough to survive its devastating effects without the necessity of total surgical ablation of her reproductive organs, she still is confronted with the probability of a stenosed cervix or of hopelessly damaged and occluded tubes, or of ovaries which have become completely sealed up in envelopes of adhesions. Any one of these unwelcome legacies will, of course, ruthlessly bring to bitter disappointment her most cherished hope, namely, that of motherhood.

Furthermore, puerperal infections, which so often result in pelvic peritonitis and extensive involvement of the uterine appendages in adhesions, contribute a substantial quota of one-pregnancy sterile women. A small proportion of such cases still occur in our best obstetrical wards, but the great majority of them follow in the wake of criminal abortions.

Tuberculosis is responsible for an additional small number of hopelessly occluded tubes.

Likewise, any form of septic peritonitis originating from perforations of the hollow viscera and even the so-called idiopathic variety may completely seal off the fimbriated ends of the tubes and bury the ovaries in such dense adhesions that further ovulation becomes impossible.

And, finally, in a much more elusive way infec-

tion may prevent conception even when no mechanical obstruction exists at any point from the external os to the fimbriated ends of the tubes. This misfortune is brought about by the creation of an environment at the vaginal vault and within the cervical canal which is chemically hostile to spermatozoa. Such a status is believed to be due to toxins produced through chronic infections of the endocervical glands, or to an antagonistic vaginal flora. More scientific light is needed, however, upon this problem of incompatibility. But every gynecologist has repeatedly overcome sterility by clearing up chronic endocervicitis and by changing the chemistry of the vagina through an attack upon its bacterial content. In my own series I have twenty-seven successful cases in which no other measure, whatsoever, was employed.

3. *Malposition and Foreign Bodies.*—In a small percentage of cases extreme grades of retroversion of the uterus may be an important factor in sterility. Not only does this condition bring about a chronic passive congestion of the intrapelvic reproductive units, but it often produces an actual mechanical obstruction of the tubes through torsion or angulation. In a few instances I have seen pregnancy follow shortly after a simple bimanual pelvic examination in such cases. An acutely anteflexed uterus with anteverted cervix is believed by many to be a common cause of relative infertility.

Pessaries of various types, if not kept scrupulously clean, are undoubtedly responsible for an altered and hostile chemistry within the vagina—a fact to be kept prominently in mind since they are so commonly used therapeutically. The intracervical stem pessary is still employed by some to combat sterility, but certainly it has an extremely limited use if it is to be condoned at all.

4. *Traumatic Conditions.*—Obstetrical injuries of the cervix and pelvic floor often lead to chronic infections of the cervical glands and to an abnormal bacterial flora within the vagina. Or sometimes a perineal or cervico-vaginal cicatrix may result in prohibitive dyspareunia. So, too, vesicovaginal fistula is frequently accompanied by amenorrhea and consequent sterility. Extensive burns of the vulva or accidental carbolic acid eschars of the vagina may produce strictures that require extensive plastic surgery to admit of coitus. Improper use of douches sometimes results in chemical death of spermatozoa and thus to unintentional contraception. And, finally, unskilled and ill-advised irradiation of the female reproductive organs, which has been so energetically and viciously propagandized by those commercially interested, is supplying an ever-increasing quota of permanently sterile women.

5. *Neoplasms.*—Tumors of the vulva—for example, large fibromata, the autoinoculable verruca acuminata, Bartholin gland cysts and urethral caruncle—either mechanically or by reason of dyspareunia—may prevent coitus.

Cervical blockade by mucous polypi or by a submucous myoma occasionally prevents ingress of spermatozoa. But sterility under such circumstances, as is true also of malignant disease of the cervix, is much more apt to be due to associated hostile secretions which are always present in great abundance.

Fibroid tumors of the uterus produce sterility much less frequently than they do spontaneous abortion and complications of labor. Nevertheless, they can effectively block both tubes and, further, through the frequency of associated menstrual disturbances and other complications, they demand particular consideration when encountered in connection with the problem of sterility. And adeno-myomata, with the frequent association of pelvic endometriosis, are of even graver significance.

6. *Ovarian Tumors.*—In general, new growths of the ovaries may produce sterility in two ways: (1) they may prevent follicular ripening and ovulation; and (2) they may either obstruct the fallopian tubes by pressure, or the tubes may become so stretched and distorted that even if ovulation does occur, there is scant possibility of the discharged ovum finding its way into the remotely situated fimbriated tubal ostium. It is surprising that total amenorrhea occurs so rarely with bilateral ovarian tumors of any variety; the incidence is probably not over 2 to 3 per cent. But scanty and delayed menstruation are much more common, and when such a functional disturbance is found associated with bilateral tumors coexisting sterility must, in the absence of other discoverable factors, be attributed to them. Multiple follicular atresia characterized by imprisonment of the ova in follicles that have undergone partial development and then retrogression without luetinization is undoubtedly a frequent cause of sterility. This disease is nearly always associated with menstrual disturbances, and

often, too, there are stigmata of hypoplasia in other units of the generative system.

7. *Miscellaneous Factors.*—Reproductive inhibition or relative infertility is unformly associated with many chronic diseases that gradually bring about general constitutional debility. Examples in this group are pernicious anemia, chlorosis, the leukemias, diabetes, pulmonary tuberculosis, Addison's disease, nephritis and faulty metabolism from various dietary deficiencies. Chronic intoxication from morphine, phosphorus, lead, arsenic and alcohol undoubtedly exerts a deleterious effect upon the sensitive germ-cells with consequent reduced fertility, if not actual sterility.

The endocrinopathies—particularly those originating in the anterior lobe of the pituitary gland, the thyroid and the adrenal glands—exert a profound influence upon the gonads and their gametogenic activity.

Psycho-neurotic states and mental depressions arising from sustained occupational or emotional stress also seriously impair fertility. This applies particularly to women who exhibit complete absence of libido-sexualis and who commonly complain of prohibitive vaginismus and dyspareunia.

And, finally, consanguinity appears definitely to diminish fertility. Indeed, according to some statistics fully one-third of such marriages will prove barren.

DIAGNOSIS

It now becomes evident, even from this incomplete survey of the multiple and varied factors involved, that sterility is rarely a simple clinical problem. Its solution nearly always requires a thorough-going general diagnostic study of both parties to the mating. Nor must one rest content with the discovery of a single obstacle. Meaker carefully tabulated the factors responsible in seventy-five cases of sterility and found:

Male factors—115—40 local plus 75 constitutional.

Female factors 242—165 local plus 77 constitutional.

The average number of etiological units per case was between four and five. And while the constitutional causes were the same in both sexes, the local obstacles to conception were four times more frequent in the female.

Confining our discussion now to the problems presented by the sterile woman, let us consider exactly what diagnostic procedures are to be followed in any given case. First of all, a careful general history covering the specific infectious diseases and the various systems must be obtained; this should include particularly any evidence of ancestral infertility; the incidence in early life of contagious diseases, especially mumps and the exanthemata; the age of puberty and the customary type of the individual's menstrual cycle; the existence of abnormal vaginal discharge; a careful inquiry into symptoms of endocrine dysfunction; cohabitation habits and unsatisfactory features of marital relations, including anxiety neuroses, frigidity, dyspareunia and absence of libido.

Next in order is a general physical examination including, of course, an exact investigation into the status of each unit of the reproductive apparatus, the usual laboratory aids and such special tests as may be indicated.

Then follows a determination of the compatibility of the male and female secretions or, in other words, the chemical environmental conditions which greet the spermatozoa upon being deposited at the vaginal vault. This is admirably accomplished by means of the invaluable Hühner test, which not only is an accurate indication of compatibility, but furnishes also valuable information regarding male potency as evidenced by the number, morphology, motility and endurance of the spermatozoa present. In the performance of this test the woman is instructed to report for examination within one or two hours after coitus, and she must be cautioned not to void the urine prior to the test. The first microscopic preparation is obtained by means of a pipette from the secretions at the vaginal vault. The latter, together with the vaginal portion of the cervix and external os, are then thoroughly cleansed with cotton and a second preparation is obtained from the cervical canal. Under normal conditions an abundance of active spermatozoa should be recovered from both locations, but a variety of findings is possible and the proper interpretation of these furnish substantial help in the solution of our problem.

Finally, our investigation must also include determination of cervico-tubal patency. The simple introduction of a uterine sound at once reveals the presence of obstruction in the cervical canal; and

—thanks to I. C. Rubin, who introduced both the necessary apparatus and the method in 1920—the employment of uterotubal insufflation almost as quickly discloses tubal blockade.

Rubin enumerates the following contraindications to performance of his test: (1) inflammations of the genital tract, i. e., colpitis, endocervicitis, adnexal inflammation; (2) absence of spermatozoa; (3) cardiovascular disease or other systemic conditions which would prove serious if pregnancy should intervene; (4) patients of frankly neuropathic disposition who do not make good subjects; (5) menstruation.

The average incidence of tubal obstruction revealed by this method as reported by various authors varies from 55 to 60 per cent of the sterile women tested.

Localization of unyielding obstruction in the tube is of both prognostic and therapeutic importance. Rubin has recently shown that this is possible of attainment with remarkable accuracy by simply noting the site of the pain produced by the gas pressure during insufflation. Mid-line pain above the symphysis indicates blockage at the uterine end of the tube; but when closed at the fimbriae, pain of greater severity radiates well out to the sides and is produced by distention of the tubes.

The method commonly employed hitherto for this purpose has been hysterosalpingography after injection of lipiodol into the uterus. The advantages of this procedure are that it discloses any deformity of the uterine cavity; that it differentiates unilateral from bilateral tubal patency; and that it accurately locates the point of obstruction in each tube which is nearest to the uterus. Its disadvantages are that it gives no information of the condition of the tube distal to the first point of occlusion; that it does not accurately disclose the degree of patency; that it may remain for months in the tubes without being absorbed and may actually set up an inflammatory reaction terminating in complete and permanent stricture where partial patency previously existed; and that if any of it escapes into the pelvis a violently painful irritative peritonitis results.

TREATMENT

It would be quite superfluous for me to discuss here the treatment of sterility in great detail. From what has already been said its successful management obviously requires a comprehensive and searching examination of both parties to the fruitless union, if we are to focus our therapeutic attack exactly upon the four or five factors which are specifically responsible in any particular case.

It might be wise to sound a note of warning regarding the proper management of individuals and mates found to be incurably sterile. Few situations require the exercise of saner judgment or of greater tact. The dream of a lifetime may be rudely shattered with unpredictable consequences in the psychic domain, especially in the male, if such a verdict be rendered with brutal frankness. Usually it is wiser and far more discreet to keep a rainbow of hope always suspended in the clouds of despair until time in its gentle flight shall have silently revealed the truth.

But, fortunately, earnest therapeutic effort is crowned with success in a surprisingly large percentage of cases. Consider briefly our combat equipment and the rationale of its application.

Fortified with our newer knowledge that deficient gametogenesis is often only a temporary by-product of undernutrition and dietary deficencies which are traceable either to ignorance or to sustained occupational and emotional stress, we promtply institute under such circumstances an appropriate upbuilding and disciplinary regime.

Progress in prenatal care, and let us hope in the science of eugenics also, coupled with a more intelligent control of childhood and adolescence will, I believe, eventually lead to a declining incidence of developmental deficiencies. But even when these are encountered, plastic and corrective surgery has much to offer.

Again, when the exigencies of a difficult labor leave the birth canal so badly traumatized that the unfortunate mother is inevitably doomed to one-child sterility, reconstructive surgery with its wealth of resourcefulness is often able to restore function. Indeed, this may frequently be accomplished in suitable cases by the judicious use of pessaries alone or in conjunction with other simple therapeutic measures.

Neoplasms, of course, often offer insurmountable difficulties. And yet a carefully planned and executed operation may achieve success where one's first impression indicates that there is no escape from total ablation.

Certainly it is gratifying to consider the amaz-

ing progress that has been made within recent years in prevention and treatment of the devastating effects of pelvic infections. Particular mention should be made in this connection of the ingenious and highly effective physiotherapeutic devices which are now available, because intelligent use of these measures quiets the inflammatory storm, eradicates infection and converts an environment which is distinctly hostile to fertilization into one that is in all respects congenial to that episode. And if, perchance, the damage has already been done before restoration of function is sought, uterotubal insufflation and hysterosalpingography coupled with plastic surgery judiciously applied to damaged tubes and ovaries will still be able to salvage a substantial quota.

Other remedial agencies which possess undoubted merit are available to be employed under particular circumstances, but I shall have to omit a discussion of them now and immediately bring this review to a close. I earnestly hope that it has been sufficiently comprehensive to afford an accurate idea of present-day views on the subject of sterility.

II. The Hormones in Gynecology

The extraordinary panorama which in the domain of endocrinology has been rapidly unfolded before the eyes of the scientific world within the past decade and a half is difficult to contemplate with complete equanimity. Indeed, so stirring is its effect upon one's imagination that a sane interpretation and evaluation of what has transpired requires the exercise of sustained literary restraint. Metaphorically speaking, we have been observing the tedious assemblage of what might be aptly described as a remarkably ingenious and complicated jigsaw puzzle, many pieces of which through diligent and persevering effort have already been cleverly fitted together, but the pattern is far from complete, with many defects still remaining to be filled by essential units not yet discovered and identified, before we will be able to visualize this amazing example of physiologic art in its entirety.

At this time our discussion is concerned mainly with the knowledge of hormone activities that has accrued from an intensive study of female sex physiology, and we may conveniently begin with a consideration of the cycle phenomena here exhibited.

We now know that in the vast majority of normal women there recurs each twenty-eight days from puberty to menopause at least two beautifully coordinated physiologic cycles involving specific reproductive units. The mechanism is set into operation through sudden activation of an hitherto dormant primordial follicle in the ovary. Exactly what factors determine the specific selection of one follicle from among many thousands of identical age and histologic appearance we do not know, but certain it is that once a follicle becomes activated, it rapidly develops into a full grown Graafian follicle within two weeks and becomes so distended by its own secretion of liquor folliculi that approximately on the fourteenth day it spontaneously ruptures and ejects the hitherto imprisoned ovum. The latter, of course, has likewise in the same period of time reached maturity and is now ripe for fertilization. Whether or not in this vitally important process of maturation the ovum itself elaborates any specific hormone and, if so, precisely what part it plays in the objective phenomena observed is still an unsolved question.

It might be profitable at this point to digress for a moment in order to consider nature's device for safe transfer of the ovum from the ruptured follicle into the fimbriated end of the fallopian tube. The female among lower animals is provided in different species with specific safeguards in this respect, such as a capacious infundibulum, prehensile fimbriae, ciliated peritoneal epithelium, etc., but in the human female, curiously enough, no comparable structures are to be found. On the contrary, there normally exists an actual tubo-ovarian hiatus of variable length, which, under special conditions such as obtains, for example, following surgical extirpation of one tube and the opposite ovary, may almost equal in length the transverse diameter of the pelvis. And yet, even under such circumstances, pregnancy frequently occurs. What factors then are responsible for thus safely guiding the ovum to its purported destiny? At least three agencies may participate in this important function: (1) the liberal supply of lymph always present in the pelvis of a normal woman; (2) the vigorous and rhythmic peristaltic contractions with which both the uterus and the fallopian tubes are endowed; and (3) the myriads of long cilia perched upon the tops of the tubal epithelial cells which, by moving in perfect unison, maintain an endless series of minute wavelets al-

ways advancing toward the uterine cavity. Collectively, these three constitute a dependable mechanism for safe and sure transfer of the delicate ovum after it has been so rudely catapulted from its embryonic nest.

But this same follicle nest has other and important work yet to do which vitally concerns the future welfare of its discarded egg. Up to this period in its life history, in addition to housing the ovum, from the very moment since it became activated the follicle has been busily engaged in the manufacture of one of its two potent hormones, namely, theelin. The isolation of this agent in crystalline form in 1928 by Doisy and his co-workers in this country and independently by Butenandt in Germany, marks an epoch in hormonology; but some confusion has resulted from the multiplicity of names that have been used for various reasons, partly scientific and partly commercial, to designate it. Among the commoner ones in general use are theelin, ovarian follicular hormone, oestrin, female sex hormone, progynon, folliculin and amniotin.

The physiology of this hormone has been diligently studied both through searching inquiry into the part it plays in the growth and oestrual phenomena of immature females and mature castrate laboratory animals, as well as through intimate and unremitting investigation of its role in the menstrual cycles of primates. The rapid prenatal growth and postnatal involution of a baby's uterus is believed to be due to a liberal supply of folliculin from the maternal circulation prior to parturition and to its abrupt withdrawal upon severance of the umbilical cord. The period from birth to puberty is characterized by relative inactivity so far as the follicular apparatus of the ovaries is concerned. To be sure, there occurs durings these years a sharp reduction to approximately one-third of the original number of primordial follicles present in each ovary at birth. This is accomplished through a process of atresia and absorption, but we are ignorant as to its causation, as we are also concerning the question as to whether during infancy and childhood folliculin plays any part in the gradual growth of the entire genital system. There is an abundance of collateral evidence to justify a firm belief that it does.

But this long period of almost total inhibition of ovarian activity comes abruptly to a close with the advent of that remarkable epoch which we call puberty; and what a strange and heterogeneous group of phenomena is now ushered in! We designate these as the secondary sexual characteristics, which includes growth changes in the bony pelvis; changes in body contour; mammary gland development; growth of vulval, pubic and axillary hair; growth of the larynx, with consequent change of voice; activation of ovarian follicles and the onset of menstruation; sex consciousness and the awakening of libido; demonstrable enlargement of the thyroid gland; and marked nervous, emotional and psychic instability.

Now compare with this list the reactions of laboratory animals to the experimental administration of theelin as described by Edgar Allen. The response includes marked proliferation of the vaginal epithelium; striking growth changes in the uterus; rapid hyperplasia of the endometrium; secretion of fluid by the uterine glands; changes in the amplitude and rate of uterine contractions; hypertrophy and repair of the tubes; growth in the mammary gland tree; production of oestrus; induction of precocious maturity; and induction in the female of a brief period of extreme activity at oestrus. The evidence afforded by such clinical and experimental data, to which a substantial corroborative increment is available from clinico-pathological sources, leaves no doubt, whatsoever, that folliculin is primarily a growth hormone and sexual activator. In the human female the belief appears to be well founded that it is directly responsible for the gradual and progressive hypertrophic changes of the endometrial cycle up to the beginning of the secretory or pregravid stage.

Returning now to the mature Graafian follicle, we know that immediately after rupture and expulsion of its contents there follows in orderly sequence the corpus luteum cycle. It is an interesting historical fact that even before the era of intensive study of the physiology of menstruation, which now covers two decades, the Breslau embryologist, Gustav Born, not only believed the corpus luteum to be a gland of internal secretion, but he also formulated an hypothesis attributing to it the production of a specific hormone which both inhibits ovulation and prepares the endometrium for nidation. His pupil, L. Fraenkel, undertook to test the validity of this hypothesis in a striking series of experiments upon

rabbits, and published his observations in 1903. He found that operative removal of corpora lutea from the ovaries of pregnant rabbits results uniformly in absorption of the fetuses when done early in pregnancy, whereas later ablation produces abortion. Excision or cautery destruction of other portions of the ovary failed to produce these results. Fraenkel concluded, therefore, that the corpus luteum is essential to normal implantation of the ovum and to continuation of pregnancy. This publication proved to be a tremendous stimulus to other workers and within a decade intensive studies of this little endocrine unit, particularly by Robert Meyer, Ruge, Miller and Fraenkel, completely elucidated its life cycle. Through these and other supplemental researches it has been ascertained that the life cycle of the corpus luteum closely parallels the time required for the ovum to transverse the fallopian tube, and that exactly at the time when the fully developed corpus luteum attains its maximum degree of secretory activity the endometrium likewise exhibits the height of its cyclic growth. The final and convincing experimental proof that the corpus luteum does produce a specific sensitizing hormone was furnished by Corner and Allen in 1929 when they succeeded in preparing an aqueous extract from the yellow body which produces the typical progestational or pregravid endometrial reaction in castrates. Furthermore, by repeated injections of this extract they were able to prevent interruption of pregnancy in rabbits notwithstanding the fact that the ovaries were completely removed within twenty-four hours after copulation. This newly isolated hormone they aptly called progestin.

There is available an abundance of experimental evidence to justify the conclusion that neither folliculin nor progestin acting alone can bring about the entire menstrual cycle of the endometrium. This is accomplished through a beautifully adjusted sequential action of these two hormones in which immediately following the endometrial desquamation incident to the menstrual flow folliculin stimulates the process of repair and continues steadily to promote growth of the entire endometrium up to the final progestational or pregravid stage, whereupon progestin takes over the job and puts on the finishing touches just in time for arrival of a fertilized ovum. If impregnation has not occurred, naturally nidation cannot occur; consequently the corpus luteum cycle ends and the suppression of its hormone progestin until recently appeared to be responsible for the catabolic phase of the menstrual cycle, namely, surface desquamation of the endometrium and flow of menstrual blood. But this view now has to be modified since it has been shown that, in the human at least, folliculin production is continued by the corpus luteum, and that whereas it is true that excision of the corpus luteum produces uterine bleeding, the same thing occurs if a mature follicle is ablated. This evidence seems clearly to indicate, therefore, that menstrual bleeding is to be attributed to withdrawal of folliculin rather than of progestin.

We come now to a consideration of the influence of extrapelvic hormones upon ovarian function. And here particularly we encounter in the literature a vast deal of impressionistic speculation. An abundance of clinico-pathological evidence is available to indicate that profound dysfunction of any one of the major units which collectively are designated the endocrine system will produce disharmony in gonadal function. Familiar examples are furnished by the menstrual disturbances commonly encountered with hyperthyroidism, or the hypogenitalism of cretins; and by the polyglandular syndromes which characterize neoplasms of the adrenal, the pineal and the pituitary glands.

Of these various closely interrelated physiologic units the hormonal activities of the anterior lobe of the hypophysis have been studied with particular zeal and with substantial profit. This tiny bit of glandular tissue is composed of cellular elements which, on the basis of their staining reactions, are divisible into two chief types: (1) those containing a non-granular cytoplasm, and (2) those with a distinctly granular content. The former are the neutrophil (chromophobé) elements and the latter are of two varieties: (a) those whose granules show an affinity for acid dyes (acidophil cells) and (b) those with an affinity for basic dyes (basophil cells). But to these three types of cells Evans in a recent review of our present knowledge of anterior pituitary function ascribed the production of no less than five distinct hormones which can be clearly differentiated by means of specific biologic tests; namely, growth, gonadotropic, thyrotropic, lactogenic and diabetogenic hormones.

In this discussion we are concerned only with

the gonadotropic principles. Accumulated clinical data relating to primary pathologic lesions of the pituitary glands supplemented by a wealth of corroborative extirpation experiments has shown that marked hypophyseal deficiency in the immature results in defective development of both primary and secondary sex phenomena, while in the mature female it profoundly disturbs the physiology of the sex cycle. Now the antithesis of this sexual infantilism, namely, precocious sexual development may be produced at will by the conveyance to animals either of hypophyseal transplants or the sustained administration of anterior lobe extracts. But confusion still exists and controversial discussion continues unabated both regarding the number and source of the gonadotropic hormones. For example, there is a sharp conflict of opinion as to whether prolan—the sex hormone which is so abundantly present in the blood and urine of pregnant women and which furnishes the basis of the invaluable Aschheim-Zondek pregnancy test and its modifications—is of placental origin or is derived from the pituitary gland. Certainly impressive biologic evidence has been adduced to show that this hormone, prolan, is not the true anterior hypophyseal sex hormone. Not only can the two be clearly differentiated, but, according to Evans, the potency of prolan can be greatly increased by the addition to it of simple alkaline aqueous extracts of the hypophysis; and, conversely, extracts of this gland known to be rich in gonadotropic hormone and free of growth hormone can be intensified in potency through the addition of prolan. Much of the earlier confusion in these biologic investigations has been cleared up through the discovery of wide species variation in hormonal reactions, and it has been a bitter disappointment, too, to discover that so little of genuine practical therapeutic value can as yet be successfully employed in the human female. But we clinicians must not forget the debt of gratitude we owe to our research confreres who through much labor have contributed and will continue to contribute so much to endocrinology. It remained for these men to demonstrate the utter worthlessness of the varied assortment of gland products, the therapeutic use of which in former years proved so discouraging. Today we have a flood of new products which are being paraded under a variety of trade names, for which claims far exceeding in extravagance those made for the older preparations are being vaunted and which are expensive too. High pressure salesmanship at its best is being exhibted with ruthless vigor. There is need, therefore, for the exercise of great caution and as yet only a limited expectancy, if measured by results obtained, is justified.

In conclusion, it might be worth while briefly to summarize the therapeutic application and limitations of the ovarian and pituitary hormones at present available for clinical use.

In cases of delayed puberty attributed to infantilism of the reproductive apparatus I have seen no demonstrable effect either upon growth or function of any combination of hormones at present obtainable. It would appear that cautious use of the growth hormone of the anterior pituitary gland in combination with theelin would be clearly indicated. But the former is not yet available for clinical use, and the latter is entirely inefficient.

Varying grades of hypoplasia of the pelvic organs, associated with dysmenorrhea and sterility, is commonly encountered by every gynecologist. There now remains little doubt that the menstrual cycles in these women are uniformly anovulatory. Their ovaries contain multiple tiny cystic follicles which have partially developed and then retrogressed with imprisoned degenerated ova. Since they do not ovulate, it is quite clear why we have hitherto failed in this group to overcome sterility. As yet we are unable either to bring about full development of their pelvic organs or to prevent follicular atresia and attempts to do so by the use of any of the commercial hormones now to be had have in my experience failed utterly. Amenorrhea as a functional disorder of the reproductive organs and when unassociated with other organic or constitutional maladies may sometimes be benefited by the liberal use of folliculin, but the results are discouragingly uncertain and disappointing.

The functional bleeding cases—both of the menorrhagic and metrorrhagic type—so commonly encountered in young women, as well as in those of menopausal age, theoretically should respond to the hypodermic administration of antuitrin, since this is the pituitary-like hormone obtained from the urine of pregnant women which is supposed to stimulate luteinization of the ovarian follicles and thus inhibit the bleeding. A considerable measure

of success has been obtained in young women in this way, but the older women do not respond nearly so well, and in both groups we experience many failures. No one knows exactly how the successes are to be explained either, since often the bleeding stops short within several hours after injection of the antuitrin and long before any luteinization of follicles could possibly have occurred. Nevertheless, antuitrin is a valuable acquisition for the conservative treatment of functional uterine bleeding.

Instances of so-called primary dysmenorrhea are forever cropping up to plague us. Considerable recent experimental evidence supports the idea that the actual cause of the pain is increased irritability of the uterine musculature with exaggerated contractural response to excessive production of folliculin and a deficiency of progestin, the latter substance being the normal inhibitor of rhythmic uterine contractions. Practical control of such cases of dysmenorrhea through supplemental use of progestin is not yet possible, since this hormone is not obtainable for clinical use.

The use of folliculin as a part of the therapeutic management of severe menopausal symptoms is often, but not always, followed by gratifying results. Certainly it should always be freely employed in these cases.

In all of these functional disorders, if we may judge from the few scattered experiments upon the human female thus far reported, our hormone dosage as measured in rat units has hitherto been far too small. For example, Kaufmann recently reported the first artificial production of a complete menstrual cycle in a castrated human female that has been achieved. To bring about this result he used 320,000 mouse units of folliculin and ninety rabbit units of progestin! It is not surprising, therefore, that our results have not hitherto been brilliant following the periodic injection of several hundred units of folliculin. But let us not become impatient. Behold what a wealth of accurate and astounding physiologic fact has already been revealed within this brief era of intensive endocrinological research! In this brief review I have discussed only a mere fraction of it. Certainly, therefore, it behooves us clinicians to maintain an attitude of sympathetic and cooperative helpfulness towards our splendid research colleagues who are working with such commendable zeal to provide us with effective measures for bringing sunshine into the lives literally of thousands who now are hopelessly groping amid the fogs of endocrine imbalance.

CLINICAL STUDY OF ROCKY MOUNTAIN SPOTTED FEVER EASTERN TYPE.*

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During the past spring and summer seven cases of Rocky Mountain spotted fever were observed by the staff of the University of Virginia Hospital in the vicinity of Charlottesville. While in the main these cases conformed to the already published clinical descriptions, they presented interesting variations.

In 1931, Badger, Dyer and Rumreich[1] described the identification of the infection in the Eastern portion of the United States. Since this report a number of other authors[2] have noted the appearance of the disease in this section of the country. Because of the increasing number of cases reported, it is probable that this infection will be more frequently encountered in general practice.

Charts I, II and III show the temperature, pulse and important data in a mild, moderate and severe case, respectively, of the infection with recovery. Chart IV shows the rash at its height in Case IV.

The following case reports give the important data in each individual instance:

Case I, E. F.: Male, age 16 years, admitted June 19, 1934.

Chief Complaint: Headache.

Family History and Past History: Unimportant.

*Read at the sixty-fifth annual meeting of the Medical Society of Virginia, in Alexandria, October 9-11, 1934.

CHART I

CHART 1 ~ E·F·~ MALE, AGED 16 YRS.~ ADMITTED 6-18-34.

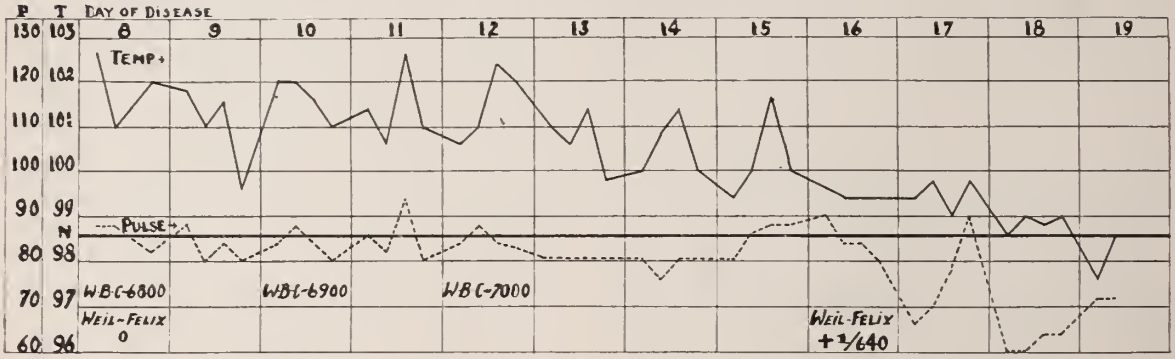


CHART 2. W.H.- MALE AGED 17 ~ SEEN 7-28-34

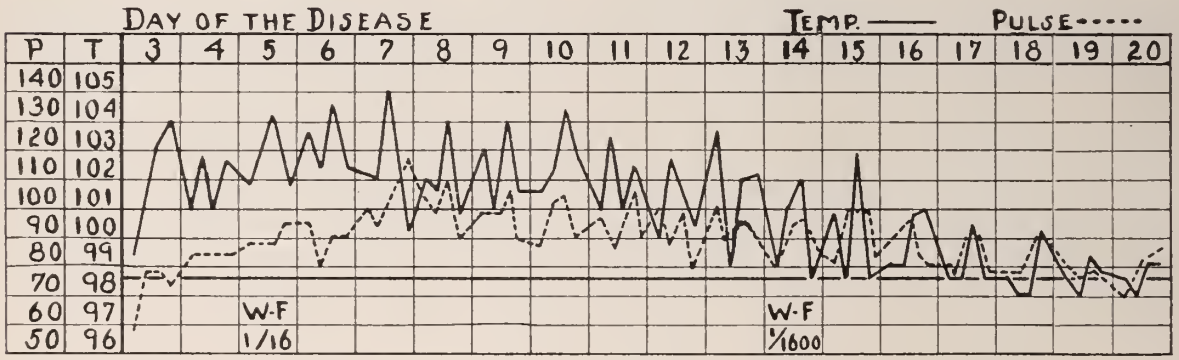
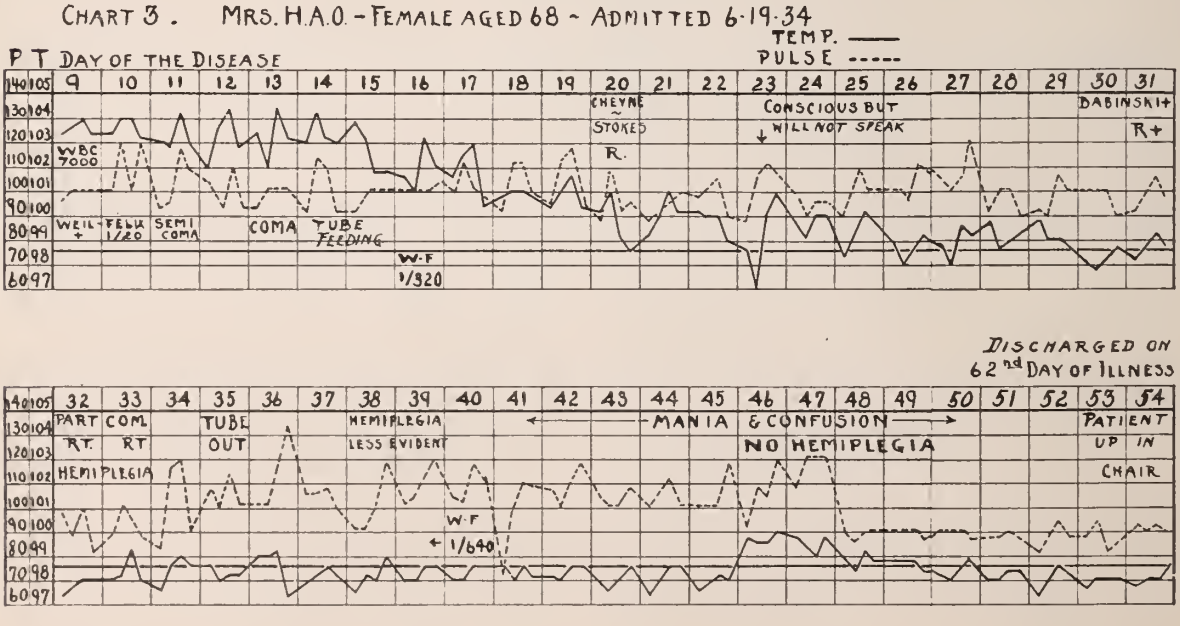


CHART 3. MRS. H.A.O. - FEMALE AGED 68 ~ ADMITTED 6-19-34


P T DAY OF THE DISEASE
TEMP. ——
PULSE -----
9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
WBC 7000
WEIL-FELIX +
WEIL-FELIX 1/20
SEMI COMA
COMA
TUBE FEEDING
W.F 1/320
CHEYNE ~ STOKES R.
CONSCIOUS BUT WILL NOT SPEAK
BABINSKI+ R+

DISCHARGED ON 62nd DAY OF ILLNESS

32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54
PART RT. HEMIPLEGIA
COM. RT
TUBE OUT
HEMIPLEGIA LESS EVIDENT
W.F 1/640
MANIA & CONFUSION
NO HEMIPLEGIA
PATIENT UP IN CHAIR

Present Illness: Bitten by tick one to two days before symptoms began. Before his illness he had worked in the woods. Severe frontal headache of one week's duration with poor appetite and weakness, but not confined to bed.

Physical Examination: This patient was not ill. There were a few macular and papular spots on palms of hands, soles of feet, body and legs, reddish-brown in color. Slight injection of the throat was noted. The spleen was barely palpable. The temperature returned to normal on the eighteenth day. Temperature and other clinical data given in Chart I.

Chart 4.—Rash in Case IV. Note faint macular areas and darker petechiae.

Case II, W. H.: Male, age 14 years. (Seen 7-28-34, in consultation with Dr. W. C. Mason, Gordonsville, who kindly gave his permission to use this data.)

Family History and Past History: Unimportant.

Present Illness: Headache with loss of "pep" three days before, followed by backache. Rash appeared on third day of illness.

Physical Examination: Young, well-developed boy, only moderately ill. Temperature 103, respiration not increased, pulse 80. On the arms and legs there were diffuse macular areas, 2 to 3 mm. in diameter, slightly raised from the surface. A few were noted on the back. This patient was seen three times following the first visit, during which increasing toxicity, stiffness of the neck and marked conjunctivitis were noted. Extreme tenderness of the skin developed and the rash became generalized, involving the face. The spots later became purplish-red in appearance and particularly intense over the buttocks. Painful tender glands were noted in the cervical region.

Convalescence was uneventful except for a restless nervousness. This patient gave a history of frequent tick bites ten days before present illness started. The temperature reached normal on the eighteenth day. Important data given in Chart II.

Case III, B. W.: Male, age 14 years, seen in consultation with Dr. Mason, 8-11-34.

Family History and Past History: Unimportant.

Present Illness: Four days previously this patient began to feel badly, complaining of intense frontal headache. This had persisted and was accompanied by photophobia and general malaise.

Physical Examination: Healthy, thin boy with conjunctival injection, moderately stiff neck. Heart and lungs normal. Pulse 70. Abdomen distended. Over the wrists, forearms, buttocks, ankles and lower legs there were pink, macular areas about 2 to 4 mm. in diameter. A few similar scattered areas were noted over the back and abdomen. The face was clear.

Course: This patient developed a rash over the whole body and ran a typical course of the disease, recovering completely. History of tick bite two weeks before onset. The temperature reached normal on the seventeenth day. Weil Felix positive 1:160 on the fourteenth day.

Case IV, Mrs. H. A. O.: Age 68 years., admitted 6-19-34. This patient was unusually healthy until onset of present illness.

Present Illness: Well until eight days before admission when she experienced loss of appetite, fever and pain in the left side of the abdomen. Following this until admission the patient just felt "no account" with a slight frontal headache.

Physical Examination: Toxic, moderately ill, elderly woman, with slight injection of the conjunctivae. There were a few rales in the base of the right lung. The abdomen was distended, spleen not palpable. Over the forearms, chest, abdomen, buttocks, ankles and feet there were brownism-pink macular areas 2 to 5 mm. in diameter.

Course: The patient rapidly became more toxic, lapsing first into a semi-coma, followed by coma. The neck became very stiff but two lumbar taps were negative. The rash extended over the whole body, sparing the face. On the tenth day after admission a duodenal tube was passed and patient received nourishment by this route for twenty-two days. During this period she had incontinence of urine and feces. On the thirty-first day of the disease she developed a positive Babinski on the right, followed by complete right-sided hemiplegia, which cleared up on the forty-sixth day. After regaining consciousness she had disorientation and mania, the latter persisting until discharge. Although her temperature touched the normal on the eighteenth day, it was irregularly raised for some days thereafter. A recent personal communication states that this patient has recovered mentally and physically. Chart III indicates important data.

Case V, D. W. B.: Male, age 5 years, admitted 7-27-34.

Family History and Past History: Unimportant.

Present Illness: Two weeks before admission he complained of cramp-like pains in abdomen and headache. A temperature of 102.5 was found, which remained high even though the above symptoms disappeared. One week ago he developed pain in the neck, which drew his head to one side. This pain and soreness extended down into the chest and shoulders. About this time the mother noticed several round red "bumps" on his lower chest and the inner surfaces of the arms. These spread until

they covered the entire body. The child has become more toxic, hence his admission to the hospital.

Physical Examination: The child was well-developed and nourished, very fretful and nervous. Over the trunk and extremities there was a macular eruption. This was of a brownish tint. Some petechiae were present. The conjunctivae were injected and the cervical glands enlarged. Temperature 104.6. Pulse 106. White cells 6,400.

Course: Rash became more petechial. Face not involved. Generalized muscle and joint soreness. Temperature ran a course between 103 and 104 until nineteenth day of admission (thirty-third day of disease), when it dropped to normal, pulse high. White blood cells later 28,000, 20,000 and 12,000. Weil Felix negative on admission, positive 1:1280 on twenty-fourth day of disease. Convalescence uneventful.

Case VI, H. L. G.: Male, age 54 years, admitted 5-17-34. Occupation, farmer.

Family History and Past History: Unimportant.

Present Illness: One week before admission he developed generalized headache, diffuse abdominal pain, fainting spells, nausea and nosebleed. These symptoms were followed by general malaise and chilly sensations. There was no history of tick bite.

Physical Examination: Showed a very ill, stuporous man. Scattered over the body there was a dusky hemorrhagic rash, which spared the face, more intense on buttocks, arms and legs. The neck was stiff and abdomen distended. The scrotum showed a large hemorrhagic area. Temperature 103.6, pulse 96, white blood cells 8,000 and 7,800. Weil Felix negative.

Course: This man became more toxic and died forty-eight hours after admission.

Autopsy: (Not including brain.) Showed lobular pneumonia, thrombosis of smaller vessels and perivascular lesions in heart, lungs, kidneys, spleen, adrenals, liver, skin and scrotum.

Case VII, W. M.: Male, age 40 years, admitted 6-24-34.

Family History and Past History: Unimportant.

Present Illness: This patient was well up until one week before admission when he complained of aching in legs, chills, fever and headache, which increased in intensity. On the third day after onset a macular rash appeared on forearms and legs, which spread over the entire body. There was no history of tick bite.

Physical Examination: This patient was moribund, and respirations were labored. A generalized eruption with many petechial hemorrhages was noted, but none could be found on the face. The scrotum showed a hemorrhagic area of beginning necrosis. The neck was stiff. Temperature 107, pulse 140, white blood cells 20,000. Weil Felix positive 1:160.

Course: This patient died three hours after admission.

Autopsy: (Excluding brain.) Showed an acute splenic tumor, early lobular pneumonia, perivascular round cell infiltration of skin, heart, testis, liver, tunica vaginalis and adrenals. Scrotum definitely necrotic.

Discussion

It will be seen from the detailed description that the clinical course of these seven cases is in general consistent with the diagnosis of Rocky Mountain spotted fever. This is further supported by the epidemiological information. In one case the virus was recovered in guinea pigs and studied at the National Institute of Health. Dr. R. E. Dyer[3] has identified this virus as being that of spotted fever rather than of the closely related disease endemic typhus.

The symptoms were variable, headache, severe in character, being noted in all except case IV. It is noteworthy that this patient's early symptoms were extremely mild, though she ran a most severe and prolonged course. Vague abdominal complaints, tenderness of the skin to light touch and muscular soreness were found. Rigidity of the neck occurred in four of the seven cases, but only a few cells were found when spinal tap was done in three of these. It is not surprising that the early manifestations were confused with typhoid fever when high temperature, slow pulse and low leucocyte count were so frequently observed.

The rash, macular in character, first brownish-pink, appearing on the ankles, soles of the feet, palms of the hands, arms and legs, extending rapidly to the buttocks, chest, abdomen and back, spared the face in five of the seven cases. Later these areas became darker, but confluence and actual hemorrhage were rarely seen. In two cases, Nos. II and III, the macules were definitely raised from the surface during the most active stage of the disease. In case No. I the spots were so faint and scattered that their existence was denied by some observers. In association with the extremely mild character of the illness, not severe enough to make the patient take to his bed, the true nature of the disease could easily be overlooked.

Necrosis and hemorrhage of and into the scrotum a lesion rarely described in the Eastern type, was observed in two fatal cases, Nos. VI and VII.

In three cases delirium of varying degree was noted. Two, one fatal and one recovered, had actual coma.

In this series all four young individuals recovered. Of the three patients who were past middle life, two died and one escaped by a narrow margin. This is in accord with the usual experience as to prognosis

in relation to age. Case No. IV deserved especial comment. This sixty-eight-year-old woman went into coma, had to be fed by a duodenal tube, developed hemiplegia and yet today she is completely recovered. Murchison[4] in 1884 described a syndrome identical with this as occurring in typhus. The hemiplegia observed in this case might be considered incidental except for the fact that it cleared so quickly, which is taken to indicate that it was part of the disease process and not vascular rupture.

In four of these cases the temperature reached normal on the seventeenth or eighteenth day of their illnesses, which is in accordance with the usual duration of the disease. In the other case, No. V with recovery, the temperature lasted thirty-three days. No complications were found which would explain this variation.

Leucocyte counts were made in five out of the seven cases. Four gave a count under 10,000 in the early stage, which is at variance with the textbook description of this condition. The case showing a high count was moribund at the time it was taken. A positive Weil Felix (over a dilution of 1:80) was obtained in six of the seven cases. In the other case with death occurring forty-eight hours after admission inoculation of blood into a rabbit gave a positive agglutination in this animal. This procedure was carried out in five of these patients, and is being reported separately by Maxcy.[5]

The pathological findings, as far as they were available in the two partial autopsies which were performed, agree with those described in five cases of the Eastern type examined by R. D. Lillie.[6]

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Discussion

DR. STAIGE BLACKFORD, Charlottesville: I can add nothing to the clinical discussion of Rocky Mountain spotted fever which Dr. Mulholland has so admirably presented. I simply want to emphasize the fact that this disease is not a medical curiosity in Virginia. Every physician practicing in this state, especially those living in the Piedmont sections, should have it in mind at least from April to September.

A mild case is easily overlooked, and may be diagnosed as typhoid or paratyphoid. A severe case going on rapidly to a fatal termination on the seventh to the tenth day may be passed over as a septicaemia due to other organisms. In cases that survive, the Weil-Felix reaction affords valuable confirmation, when the blood is taken about the end of the second week or during convalescence. We had found that, if blood is obtained from the patient during the first week of the disease and injected into a rabbit, this animal will give evidence of the nature of the virus by developing a Weil-Felix reaction just as do humans. This procedure is of particular value in confirmation of the diagnosis on cases which do not survive long enough to develop agglutinins for the proteus X_{19} and X_2. I want to emphasize the necessity of testing the sera from cases of this disease against X_2 as well as X_{19}, since the former may be positive, even when the latter is negative.

DR. J. C. FLIPPIN, University: There is very little time left for discussion of this paper, but I think there are one or two things worthy of emphasis. Looking back on my own experience, I am sure I have seen this disease over a period of a good many years. There was a time when I think we considered these patients as having atypical attacks of typhoid fever. After typhus fever had been described as existing in this part of the world, the diagnosis of typhus fever was unquestionably made in a certain number of these cases and rather naturally so as the two conditions resembled each other in some aspects. It is only within the last few years that we have known Rocky Mountain spotted fever as an endemic disease in the East.

It is highly probable that it is not a newcomer in our section, but its identity has remained unrecognized. I have seen a number of cases, the diagnoses of which have been substantiated by laboratory examinations, originating in the vicinity of Charlottesville and also in the Eastern portion of West Virginia. Judging from the number of cases that have come under my personal observation, it is probably not a very uncommon disease and is quite widespread in its distribution.

Our present knowledge of the methods of transmission indicates that the disease is gotten by the bite of the tick and is largely a rural disease. It is, therefore, very important for physicians practising in rural communities to be familiar with its clinical picture. Laboratory tests are of value, but the diagnosis can certainly be suspected and in many cases made with a fair degree of accuracy by study of the clinical course and the character of the eruption.

DR. RICHARD MASON, The Plains: As Dr. Flippin has just said, this is no new disease. I lived in Colorado, on the western slope of the Rocky Mountains, in 1892 and 1893. There was a very common disease there then, known as mountain fever. I had it myself and saw others there have it, and I have not the slightest doubt that it was Rocky Mountain spotted fever. I was not practicing medicine at that time, but the symptoms, as I remember, that I had myself and that the men in camp with me had were very similar to those of what we now know as Rocky Mountain spotted fever. And there were lots of ticks there in the mountains, but nobody knew anything about the tick carrying it.

Just recently I have had a case that renewed my interest in this Rocky Mountain spotted fever—or at least this case was so diagnosed by the laboratory test in Richmond. That is what I wanted to ask Dr. Mulholland about, particularly. Two blood tests showed a positive reaction for Rocky Mountain spotted fever or endemic typhus fever. This case was mild and ran along for about two weeks. The rash was not profuse, but there was a rash. The temperature subsided at the end of about two weeks. At the end of four weeks I sent in another blood specimen, which was negative for everything, typhus, typhoid, or any of the other fevers usually reported. Now, what I particularly wanted to ask is this: Is there any way for the laboratory to diagnose spotted fever from endemic typhus? Another thing: how long after the fever subsides does the blood become negative? This woman's blood became negative about the end of the fourth week, I think. It had been reported positive from two former specimens sent in during second and third weeks.

You know the report from the laboratory usually says "Positive for Rocky Mountain spotted fever *or* typhus." I should like to know if there is any way other than by clinical symptoms and history to differentiate the two diseases. This lady is very anxious to know whether she had Rocky Mountain spotted fever or typhus. She rather resents the idea that she might have had typhus; she says there are no fleas in her house. I should rather like to be able to tell her that she had Rocky Mountain spotted fever, if it could be positively determined.

DR. MULHOLLAND, closing the discussion: The two diseases are strikingly similar in many of their characteristics; namely, the clinical manifestations and physical findings, and both give a positive Weil-Felix reaction. Typhus fever is more likely to develop in the winter months and is transmitted by the body louse or more frequently in this country by the rat flea. I know of no laboratory tests that will differentiate the two other than by guinea pig inoculation and cross agglutination tests.

The procedure that is being reported by Dr. Maxcy is one that will aid in the diagnosis. If from 3 to 5 c.c. of suspected blood are injected intraperitoneally or intravenously into a rabbit showing a negative Weil-Felix reaction, subsequent examination of this animal's blood will give a positive Weil-Felix if the individual has Rocky Mountain spotted fever in the majority of instances. This is, of course, of value as a diagnostic procedure to consultants who see a patient on the outside or when the patient dies before developing a positive Weil-Felix reaction.

The final diagnosis between Rocky Mountain spotted fever and typhus in these particular cases depended on epidemiological data, the time of the year and the fact that all of these individuals were either farmers or children who had been out in the woods and had been exposed to ticks.

Several varieties of ticks have been demonstrated to be capable of transmitting the disease—the wood tick, the dog tick and the rabbit tick. The latter being widely disseminated throughout the country are probably the principal carriers. Several other less common varieties can, under experimental conditions, transmit the virus.

I am glad that Dr. Flippin emphasized the fact that this disease was so often confused with typhoid fever. The early diagnosis in many of these cases was typhoid fever, which is consistent with the fact that they presented the signs of high fever, slow pulse and low leucocyte count.

PROPHYLAXIS IN HEAD INJURY.*

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Roanoke, Va.

There are few subjects in medicine more discussed, and in which as wide a diversity of opinions exist than in the treatment of head injuries. So many papers have been read on this subject that one might think any further discussion bordered on the triteness of repetition.

Statistics are confusing in any methods of head injury treatment, because fairly good immediate results are obtained in any type of treatment or even with no treatment. The weakness of the general present-day status in treatment of head injuries appears to me to be that it is directed almost entirely towards the immediate survival of the individual

*Read before the Southwestern Virginia Medical Society, Radford, Va., September 21, 1934.

rather than his ultimate function. This conception is against all well-founded medical and surgical principles. The fact that a patient will survive a fractured bone whether or not it be reduced is not held as a reason why proper and sufficient treatment should not be instituted. Ultimate proper function of the affected part should be the basis for all medical or surgical treatment. Brain injuries should be no exception. Relief of the traumatic condition should not be directed solely to the immediate clinical state, but the end-results of the head injury should be properly visualized as far as possible. It is toward the prevention of unfortunate end-results that this paper is directed.

Every doctor is familiar with the post-concussive patient. While there is a wide personal variation in their complaints, they include, in general, headache, dizziness, incoordination and loss of memory; frequently mild sensory or motor changes are present, although this is not constant. There are usually no localizing signs of a brain lesion on neurological examination, but X-ray after an injection of air frequently reveals striking findings, the main one being a diffuse cortical atrophy. I had such a case this spring. The patient complained of severe and constant headaches. He had received a head injury four years previously when kicked by a horse, with a prolonged period of unconsciousness. He was treated conservatively and gradually regained consciousness in the space of a week. Since that period he passed from doctor to doctor with the label of a neurotic. X-rays of the skull without air were negative, but after injection of 90 c.c. of air by the lumbar route an extensive diffuse cortical atrophy was found. This is a very good illustration of poor ultimate results in head injury. There is, of course, no adequate treatment for cortical atrophy. Its most common cause is prolonged compression of the intracranial contents, and there is every reason to believe that such a condition can be prevented by proper decompressive measures at the time of the original injury. Such, at least, is my own feeling.

In evaluation of the severity and extent of a head injury I believe that the depth and the time of the unconscious period are the most constant and important criteria. Pulse, blood pressure and other clinical evidences are important, but less reliable than the phase of unconsciousness. X-rays are also important, but whether there is a fracture present or not, is of little consequence either in the treatment or prognosis unless it be of the depressed type. All too frequently the relatives and, at times, the physician hear a negative skull X-ray report with a distinct feeling of relief. This is entirely a false optimism, based neither on fact nor experience. The protracted effort in attempting to determine whether some elusive line at the base is a fracture is important scientifically and legally but should not influence the treatment to any extent.

Treatment of head injuries is directed almost entirely towards two factors, namely: 1. Hemorrhage, and 2. Cerebral edema. The former, including the middle meningeal type hemorrhage, is universally looked upon as an operative emergency, and may be a relatively simple operative procedure as in some middle meningeal types, or extremely difficult, depending on its location and extent. Massive hemorrhages, however, occur in only a comparatively small number of head injuries, whereas the second factor, cerebral edema, occurs in every head injury. There is no possible way to prevent this edema. It is the one constant factor in brain trauma. All measures are directed entirely towards accommodating, if possible the cranial vault to the swollen cranial contents. Immediately after the treatment for general shock has been given, decompressive measures should be instituted without delay. The object is to save as far as possible prolonged compression of the cerebral structures. Mild measures should be used at first, in the form of magnesium sulphate or hypertonic glucose, or caffeine in large doses. All these tend to extract fluid from the brain and lessen the intracranial tension. If after a few hours of this type therapy, the conscious state is unchanged, spinal drainage may be tried, or all the above measures may be attempted together. None of them can do the patient any harm, all help somewhat, and are probably everything that is necessary in many cases. All of us have seen many cerebral injuries benefited by spinal drainage. I have seen none harmed by such measures, and feel that its value so far outweighs any possible contra-indications, that it should be done fearlessly and routinely. If these measures are proving successful, a change in consciousness should be noted as the index of improvement, together, of course, with general clinical observations. If the unconsciousness persists with no improvement after the above line of treatment

for twenty-four to forty-eight hours, a decompression should be decided on and completed. Fortunately none of the measures used to combat cerebral edema involve much trauma or shock to the patient. The decompression is a simple procedure, can be quickly done, and usually under local anesthesia. The effects of decompression are a. times startling. If no immediate effects are apparent, you at least know that you have taken one more step in the protection of the brain structures under compression and are, as a consequence, less likely to get an unfortunate end-result. After decompression, the other measures, spinal drainage, glucose, etc., should be continued as before.

There is nothing to be gained by delay in doing a sub-temporal decompression. You can be guided only to a small extent by the patient's general condition. A decompression in my opinion should not be looked upon as a life-saving measure, but to a large extent as a prophylactic procedure to prevent the late unfortunate complications. The fact that the patient is in no immediate danger should no. be considered. Decompressions have too long been considered heroic and an emergency type surgical measure. They should be done in prolonged states of unconsciousness early, and after deliberate evaluation of the effect continued pressure is bound to have upon the brain tissue, not the effect today, but the effect on the function of the brain through the remaining years. Permanent damage in head injuries to the brain is in a very small majority of cases not due to any real laceration or direct brain destruction. I firmly believe that until we have made every effort towards relief of cerebral edema in head injury that we have not in a full measure done complete justice to our patients.

In years past, the pendulum in treatment of head injuries has swung back and forth from the conservative to the radical, and then back towards the conservative. After all, may not the so-called radical forms of treatment in truth really be most conservative? No treatment is conservative that gives poor functional results, nor is any treatment radical that gives good functional results. The immediate effects in head injuries have, to my mind, too long over-shadowed the ultimate economic and social results. The object of this paper is to focus your attention not entirely on the *beginning*, but also the *ending* in cases of cerebral injury. It should not be sufficient that a patient *lives* after a brain injury, but that he be returned to society, an *asset rather than a lasting liability!*

I have had two cases within the last month that I believe are about average types of severe head injuries most frequently seen; and who illustrate some of the points I have stressed in this paper.

Case 1.—A white girl, of seventeen, had fallen from a swing in the park. She was removed to a hospital, there to remain under conservative treatment for two weeks, totally unconscious, with no improvement whatever. X-rays on two occasions were normal. Her general clinical condition was good. I saw her at this time—deeply unconscious, could not be aroused, incontinent. Neurological examination did not disclose any definite localizing signs, but there was present a low-grade choked disc, indicating a general cerebral edema. Spinal drainage resulted in no improvement. A fairly generous right sub-temporal decompression was done and when the dura was opened a definite bulging of the cranial contents was noted through the decompressed opening. I laid back a moderate amount of dura, leaving the arachnoid intact as far as possible, according to the Elsberg method, and closed the muscle and fascia as usual. The actual operation requires about forty minutes, and is very little more traumatizing than a lumbar puncture. This patient made rather startling progress. She knew and spoke to her mother for the first time the next morning, and the choking of the discs was completely gone five days after the operation. I do not contend that this patient would have died without operation; it is unlikely. I do feel, however, that if this case could have come to operation earlier, the brain tissue would have been saved prolonged compression and damage; the unconsciousness for so long a period could have been avoided, the hospitilization decreased, and the likelihood of poor ultimate functional results materially lessened. The patient is now discharged and I am wondering if she too will be added to the already large army of post-concussive misfits.

Case 2.—White man, twenty-seven, a druggist. While driving in a car, struck a bridge and received a depressed fracture of the left frontal bone, X-ray showing one large and several small fragments impinging on the cortex. Was unconscious for six hours, but showed only mild concussive symptoms

following. He also received a badly lacerated scalp near the site of the fracture which had been repaired before he came to Roanoke. He was kept under close observation at home and showed no pressure signs except a moderate increase in reflexes on the side opposite the fracture. No Babinski, or sensory changes. The laceration healed slowly and there was a low-grade infection present, which was given every opportunity to subside before operation, to prevent the danger of a post-operative meningitis. After approximately six weeks it was felt safe to operate, and a flap was laid back. It was found that the dura had been split and a small amount of macerated brain tissue was found entirely outside the skull itself. A decompression was done, and the bone fragments were removed. The larger fragment was apparently necrotic and was forming a sinus through the skin laceration. The sinus was dissected out and the flap closed as usual with drainage. This patient was at no time uncomfortable and is now entirely well.

I believe these cases illustrate very well those in which prophylaxis in head injuries should be practiced. In neither case was the operation performed to save life. In the first instance the patient was operated upon in order to prevent additional brain compression and damage. While it should have been done sooner, every day a brain is compressed is decreasing the likelihood, not of physical recovery, but rather of proper psycho-motor function, as an end-result.

The second case suggests, I believe, that the depth of cerebral edema and unconsciousness depend not on what amount of force has struck the cranium, but to what extent the entire brain itself has been shaken up in the process. It is not compression of a small area of the cortex as by a bone fragment that is important, but rather the generalized swelling of the whole cranial contents that endangers life and ultimate recovery. Depressed fragments should, of course, be removed as a prophylactic measure, as soon as conditions permit, but it is brain edema that is important, not the fracture itself.

In conclusion, I do not wish to leave the impression that I advocate indiscriminate operations in head injuries. Every injury naturally must be considered as a specific problem, but I do urge that prompt, vigorous, and active treatment for relief of cerebral edema be instituted in every severe case of head injury, the extent of the treatment being governed in a large measure by the state of consciousness. No new types of therapy are given here, but I believe a wider and more persistent application of our present methods of treatment will bring better end-results to our patients and a greater satisfaction to ourselves.

DISCUSSION OF RUBIN TEST AND HYSTEROSALPINGOGRAPHY IN STERILITY.*

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The primary object of uterotubal insufflation and the injection of lipiodol was to aid in the diagnosis of tubal cause of sterility. With increased study and clinical experience a therapeutic value has been established. The apparatus for the insufflation of the Fallopian tubes was devised by Dr. I. C. Rubin, of New York.

The writer has added a few minor details in the arrangement of this apparatus and has designed a cabinet suitable to be kept in the office which offers a maximum protection to the delicate glass work and component parts.

Some of the salient features in using this apparatus are as follows: a low pressure-rate flow of CO_2 gas—this is regulated by the reduction valve attached to tank. It is so graduated as to give forth a constant and even flow of gas. This valve is regulated to ten pounds of pressure. It is important to try out the rate of flow before the actual test is made, e. g., fifteen seconds is required to raise the mercury column to 100 mm. of Hg., for, when this occurs, there is a certain degree of uniformity for the passage of gas into the tubes. If this is not carefully followed, one is apt to cause a sudden, forceful, irregular and uncertain insufflation of gas

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and may produce traumatic and harmful results. Slow and careful introduction of the gas is the keynote of its performance.

The above apparatus is more efficient than the bulb or syringe devices recently modified, for no hand-pressure can be as even and steady as a finely adjusted mechanical valve. Furthermore, the introduction of air instead of carbon dioxide gas increases the chances for air embolism.

Rubin uses the kymograph so as to maintain a permanent record of the tubal status. He points out that tubal strictures and peritubal adhesions may be more accurately determined. In addition, he makes use of the fluoroscope which serves as a practical guide to the type of patency.

The test is not applicable to all patients; each case must be properly selected in order to obtain satisfactory results. There must be no bleeding present, no elevated temperature, no pelvic tenderness, no sub-acute tubal inflammation, no tumors or purulent discharge. The patient must be free from serious cardiac or respiratory disease. It can readily be seen that if the test is employed in the presence of infection in the generative tract an acute exacerbation of an old chronic lesion will be brought to the surface,—the test will prove fruitless and new pathology produced. Even when the cannula is first introduced and bleeding occurs, no further attempt should be made with the test, for it is an index to an inflammatory process in the cervix or endometrium.

Perhaps the most suitable time for the performance of the test is about seven days after cessation of a regular menstruation. The endometrium is then in a quiescent state and one is less apt to meet with cases of early pregnancy if the above stated post-menstrual interval is observed. Coitus or douche should not be permitted before test is made.

In normal (open) tubes no more than 20 to 30 mm. Hg. is required to keep up the flow of gas. As a safe rule to follow, it is best not to exceed a pressure of 200 mm. Hg. in any given case.

The test is a comparatively safe office procedure and no anesthetic is required.

TECHNIC

I employ head mirror with reflection obtained from electric globe installed above examining table, thus insuring a better vision of the exposed field. The patient is placed in the lithotomy position, and vulva bathed with lysol solution. DeVilbiss bivalve speculum is introduced into vagina, and cervix and vagina swabbed with iodine and alcohol, equal parts. A short Staude tenaculum forcep is placed transversely on anterior lip of cervix. The cannula is now inserted into uterus and during insufflation gentle traction is made on tenaculum.

A drop in intrauterine pressure during an examination means that gas has passed through one or both tubes. A pressure of 200 mm. on repeated trials indicates the closure of both tubes. When tubal occlusion (spasm) is found, the administration of tincture of belladonna several days prior to the test may bring about a subsequent patency.

Pain may be present in one or both shoulders. This symptom is observed in over 90 per cent of the cases in which gas has passed into the abdomen and is very positive evidence that the tubes are patent. In the presence of non-patency, there is, as a rule, some pain referable to the tube affected and also in region of uterus. Lateral abdominal pain indicates isthmical obstruction and pain radiating towards flank suggests an obstruction at ampulla. Abdominal auscultation and careful study of the pain reaction will often serve as a guide to the location of the obstructed tube.

Peruterine insufflation seems to exert a therapeutic influence as manifested in several ways: by establishing patency of the generative tract; the "pin-hole" os associated with a hypo-developed uterus may be partially dilated by the introduction of the cannula which renders it more patulous for the reception of semen; it separates minute adhesions of the folds of tubal mucosa; tends to straighten tubal tortuosities, especially the infantile type; may dislodge a thickened mucus from a narrow to a wider portion of the tube and may cause separation of small adhesions at fimbriated extremity.

Insufflation was employed by Rubin as a diagnostic and therapeutic measure in 2,273 cases of sterility, and in 154 additional cases for other indications. In a total of 3,600 insufflations, there were no serious sequelae in the cases considered.

Tubal insufflation appears to have definite therapeutic value in sterility. This is demonstrated by actual improvement in tubal patency and function during prolonged or repeated insufflation, and by pregnancy which follows soon afterwards. Of 398 patients who became pregnant after insufflation, 123

or 21.58 per cent had peritubal adhesions or stenosed tubes. In this respect insufflation may be considered as a non-operative method of salpingolysis. There were 67.59 per cent of the pregnancies that took place during first six months after insufflation, 42.21 per cent within two months, and 27.89 per cent within one month after insufflation. Of the 244 primary cases of sterility who became pregnant, 22.13 per cent had been married for over five years before they were treated by insufflation. Of the 154 secondary cases who had found themselves unable to conceive for five years or longer after their last pregnancy, 44.15 per cent also became pregnant after treatment. Pregnancy followed in twelve women who were sterile more than fifteen years. Insufflation was the only treatment employed in 247 of the 398 cases that became pregnant (62.06 per cent). Improvement of dysmenorrhea followed insufflation in 66.6 per cent of fifty-seven patients (Rubin.)

Lipiodol Injection of the Uterus and Oviduct

This preparation is a definite chemical compound in which 40 per cent of iodine is firmly bound to poppy seed oil. The technic was originated by Dr. Jacques Forestier. Lipiodol is non-toxic and non-caustic, and ordinary tests fail to reveal the presence of iodine. The mixture is thoroughly impervious to the roentgen rays. Lipoiodine (Ciba) is used by some but the preparation selected in my own work is lipiodol as the consistency of the latter is much thicker, less irritant, more radiopaque and minimizes the chances for regurgitation.

The indications and contraindications to the use of the iodized oil are identical with those governing tubal inflation. Secard and Forestier employed it in several thousand cases without sequelae. However, if care is not exercised and the oil is rapidly injected into uterus, complications may ensue, such as fat embolism, iodism, accidental vascular injection into iliac and ovarian veins, local irritation, and rarely pelvic abscess. Infectious complications usually result from the reactivation of a previous injection.

To avoid these, aseptic precautions should be taken together with slow injection of small doses and low pressure, and no untoward results need occur.

The roentgenograms permit accurate prognosis in cases of tubal occlusion. The oil serves as a contrast medium and is useful for outlining the uterine cavity and the lumina of the tubes, when open. It further provides a record of patency when peritoneal spill is shown on the film. The phenomenon of spasticity is also demonstrated with the aid of this oil.

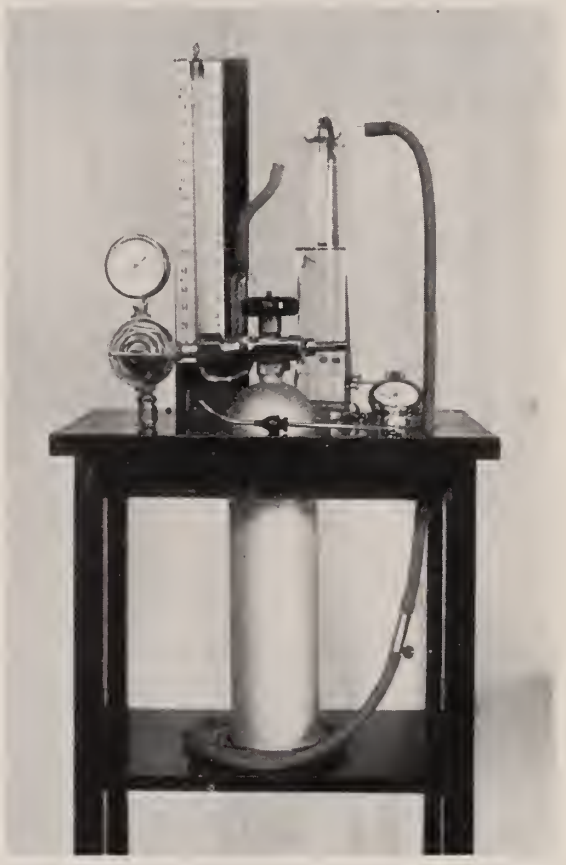

Fig. 1.—Apparatus for Rubin Test. Apparatus arranged and cabinet designed by the writer.

Incidentally, brief mention may be made here that lipiodol when injected into uterus establishes an early diagnosis of pregnancy. When the evidence is positive, there is a characteristic X-ray finding which is frequently spoken of as "atony of uterus." This method, if employed, should be only in the presence of tuberculosis, cardiac decompensation and toxemias, and when a therapeutic abortion is being considered. At present, however, the rabbit test serves as a more reliable diagnostic procedure.

Writer's Technic: Simple enema is given several hours before test is made. Painting of vulva, vagina and cervix with 5 per cent mercurochrome solution. Exposure of cervix with Stein's bi-valve

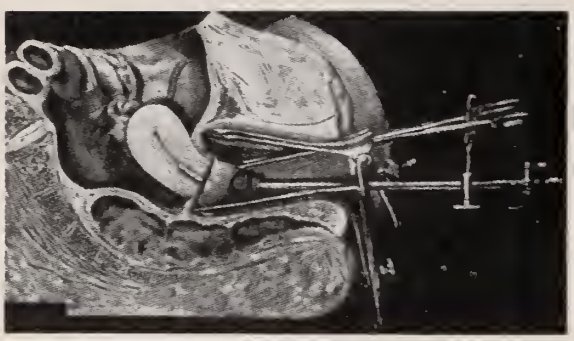

Fig. 2.—Showing instruments used in lipiodol technic.

speculum; application of the cannula which fits in a groove on posterior blade of speculum. This combined set is self-retaining and facilitates this work. Injection is now slowly made of warm lipiodol (averaging about 4 to 6 c.c.), the anterior lip of cervix being held transversely by a Staude tenaculum. After a period of five minutes the first X-ray exposure is made with patient in the dorsal recumbent posture, and following a similar second period the speculum and cannula are removed and, with patient in lateral prone position, a second exposure made. Five minutes later, with patient now in state of pronation, the third roentgenogram is made.

With all the above postures the hips should be elevated so as to favor passage of the oil into peritoneal cavity. In certain cases it may become necessary to make film in twenty-four hours, since the oil occasionally drifts through a supposed complete obstruction.

After the completion of both Rubin and oil tests, a tampon is placed in vagina for several hours so as to prevent the escape of blood and oil, which ordinarily follows.

COMMENT

In order to make a complete survey of every sterile woman, accurate knowledge of the tubal status is necessary.

In the last few years I have combined the use of Rubin test (pneumoperitoneum) and lipiodol and am convinced that the combined method is of far greater diagnostic value than either of the above mentioned methods alone. The former test is made at the office, and twenty-four hours later at the hospital the oil injection is carried out. Rubin test is painful (when patency exists), and where lipiodol is used the process is practically free from pain.

Fig. 3.—Rubin 140 Hg.-200 Hg. Lip. Shows a fairly small uterus with rather prominent cornua but none of the oil has passed out into the tubes. (Author's case.)

Fig. 4.—Rubin 200 Hg. Lip. Uterus normal size, contour and position. Both tubes are filled and some of the material has extended out into the abdomen. Pregnancy followed. (Author's case.)

Fig. 5.—Rubin 200 Hg.-190 Hg. Lip. Small uterus probably not completely filled. Right tube partially visualized. Left tube not visualized. Twenty-four hour examination shows solution is scattered throughout the lower peritoneal cavity. Pregnancy followed. (Author's case.)

With lipiodol the following information may be readily obtained: the location of tubal obstructions; uterine myomas and submucous growths; pelvic diagnosis in very obese women. In a large group of sterility patients it seems possible, with the aid of roentgenograms, to determine when surgical relief is indicated.

Francillion-Lobre and Dalsace, of Paris, on the basis of their experience with 500 hysterosalpingographies, recommend it as a therapeutic measure of the first rank in sterility. They found that a fairly high percentage of the young women on whom these tests were performed for purely diagnostic purposes became pregnant.

Some few observers believe that intervention can disturb the function of the tubes by producing an irritation or inflammation of tubal mucosa which either prevents the ascent of spermatazoa or the descent of the ova, in the latter case favoring ectopic pregnancies. Greenhill says, "the occurrence of ectopic pregnancies after the use of iodized oil is rare, just as it is after the Rubin test. However, whether there is any causal relationship between these tests and the tubal pregnancies, it is difficult to prove in most instances."

The writer is of the opinion that the action of lipiodol could not prejudice future conception. It may have some beneficial or stimulating effect on the tubal mucosa.

Both tests have an established place and are definitely diagnostic and at times therapeutic. They have passed well beyond the experimental stage. Rubin test may be repeated several times at selected intervals. Occasionally, pregnancy may follow when the gas and oil test have demonstrated the tubes to be apparently occluded.

By any type of indirect therapy we shall always beget some failures. We must be grateful, however, for such valuable allies in this mysterious field of sterility in the female.

301 E. Franklin St.

CHRONIC LEAD POISONING IN EARLY CHILDHOOD.*

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From the Pediatric Department, School of Medicine, George Washington University, and the Children's Hospital

The frequency of the diagnosis of chronic lead poisoning in early childhood is likely to be increased by the easy availability and ready recognition of zones of increased density in the ends of the rapidly growing bones of the skeleton. In this country studies made by Park and his associates, Caffey and Vogt, have been outstanding in establishing the occurrence and explanation of this valuable and probably constant sign of chronic lead poisoning in childhood. The studies of these workers have been based upon carefully observed cases, thoroughly studied postmortem material, and animal experimentation. In one of the cases reported herewith the

*Read before the Medical Society of the District of Columbia, April 18, 1934.

discovery of the zones of density at the ends of growing shafts resulted from routine X-ray studies of the long bones.

It has been known for many years that young children could be the victims of lead poisoning, Thomas and Blackfan having reported in 1914 recurring meningitis in a child of five years due to lead. In Japan, cases have long been recognized, and, according to Kato, their study respresents Japan's greatest contribution to pediatrics. Like other discoveries, a search of the literature reveals that lead poisoning has been known a very long time and in various parts of the world. Babies and children may take lead into their bodies by ingestion or by inhalation. Lead nipple shields used by nursing mothers have been responsible, as well as ointments containing lead acetate used for cracked nipples. Lead chromate used by bakers to give a yellow color to cake has been a source. Lead in cosmetic powders, lead from water pipes, lead from painted toys, woodwork in homes, beds and cribs, have all been incriminated. An unusual source of lead by inhalation occurred in Baltimore, in 1932, where forty-three cases of lead poisoning occurred among twenty poor, colored families, who used discarded storage battery casings for fuel in cooking, heating and even bedroom stoves. Lead was proved to be present in the casings and in the smoke from their combustion.

Some neuropathic children manifest a perverted appetite known as pica, eating unusual things such as soap, ashes, dirt, plaster of walls, particles of blankets and clothing, and paint off various objects in their homes. This habit becomes very strong in them, difficult to check, gives rise to repeated attacks of lead poisoning, and finally may kill or maim them, although the family may have been informed by the pediatrician of the source of the symptoms, the danger to the child, and the means of prevention. The first two cases here reported in children in their third and fourth years are of this type. Nibbling painted woodwork, toys and furniture is an inveterate habit not yet controlled in them.

The poisoning by lead generally observed in children is due to its repeated entrance into the body over weeks or months and even longer, and is therefore a chronic poisoning. There may be a certain degree of pallor; irritability and altered disposition are noticeable, accompanied by lack of appetite, abdominal cramps, vomiting and constipation. One of the cases reported below with these symptoms was suspected of appendicitis and admitted to the hospital for observation for a day to rule out this disorder. Returning ten days later the true diagnosis was established before serious nervous symptoms were present.

Some of the children when first seen have striking nervous manifestations closely resembling meningitis and accompanied by severe and prolonged convulsions which are difficult to control. The spinal fluid in such cases may show a pronounced increase in globulin, and an increase in cells from ten to 100, averaging twenty-five to forty cells, made up chiefly of lymphocytes. Drowsiness, stupor or coma may be present. There may be automatic, repetitive movement of one extremity such as an arm, forearm and hand. When paralyses are present, the lower extremities in children are more likely to be affected than the upper. Ophthalmoplegias may be present. Examination of the fundus oculi may show papilledema, retinal hemorrhages or optic atrophy.

If the physician confronted with the milder or more severe manifestations mentioned above can keep lead poisoning in mind as a possibility and secure X-ray pictures of the long bones, the diagnosis may be practically established by the findings, for the picture is so striking. At the end of the shaft adjacent to the cartilage the newly formed bone shows a zone of increased density, which Caffey demonstrated to contain about four or five times as much lead as other parts of the shaft, and which Park has shown to be due further to an increased number of trabeculae densely crowded together.

Histologically the crowded trabeculae, and chemically the tertiary lead phosphate are the factors causing the increase in density of the shadow. The depth of the lead zone indicates the growth of bone which has taken place since the beginning of the process.

In Case I, below, in the lower end of femur a dense shadow 5 mm. in thickness was found on June 26, 1933, when she was two and three-fourth years old, while a transverse line 1 mm. in width and 20 mm. from the epiphyseal line probably represents what was originally the end of the shaft when lead was first deposited in the growing femur, some weeks after she began to eat paint. This cor-

responds to the history given by the mother that she began eating paint about one year of age. Seven months after the first films of the lower extremities, new films show the dense zone to have more than doubled in width, and the line representing the original cartilage shaft junction is 28 mm. back from the growing end of the shaft. This entire 28 mm. depth of bone at the end is denser than the shaft, but not uniformly dense, and the greatest density at the end shades off but only slightly until 10 or 11 mm. away, where the density is irregular but greater than the shaft above. The original line shades off on both sides of it.

When one gets such a picture there is probably nothing else than lead to give it, at least so far as is now known. Bismuth administered in the treatment of congenital syphilis may possibly cause a zone of increased density at the shaft cartilage junction. It has been reported by Park in an infant given both bismuth and viosterol. Elementary phosphorus administered therapeutically stimulates such an intense formation of bone that a dense shadow is found in the same area; according to Park the phosphorus and lead formations are totally different. Healthy children and especially those who have been given viosterol may show a dense shadow at the ends of the shafts; also the bones of healed rickets may do so. These zones may resemble lead zones of short duration, but not the lead zone of long duration. Scurvy and congenital syphilis may likewise present dense but relatively narrow shadows at the shaft cartilage junction. Their histologic pictures are different, and there is no difficulty in distinguishing them from the lead zone. Transverse lines marking arrests in growth are sharply outlined and lack the breadth of the zones of increased density due to lead; in short, they are lines and not zones.

Park has brought out the fact that in the growing child, the different bones grow at differing rates, and even the proximal and distal ends of the same bones grow with differing rapidity. "In early childhood the order of rapidity of growth is as follows: the middle ribs; the lower end of the femur; the upper end of the femur; the upper end of the humerus, together with both ends of the tibia and fibula; the lower ends of the radius and ulna; the lower end of the humerus; the upper end of the radius; the upper end of the ulna." "The only parts of the skeleton in which lead zone formation becomes characteristic are at the points of rapid growth."

Among other cardial signs of lead poisoning is the lead line in the gums, which, if searched for with great care, may be found in one of three victims among children. It is less frequently present in them than in adults.

The anemia associated with the disorder is secondary, of moderate severity usually, with hemoglobin about 50 per cent (8 or 9 grams of acid hematin) and a moderate reduction in the number of red cells. Basophilic stippling of red blood cells is present in the majority of cases, but requires at times repeated search to demonstrate. Films should be stained with a good polychrome stain. In some children with lead poisoning it may not be possible to demonstrate basophilic stippling.

Certain workers have demonstrated lead lines in the spectrum of the ash of blood and of cerebrospinal fluid. Recently Shipley, Scott, and Blumberg reported the spectrographic detection of lead in 5 c.c. samples of the bloods of nine patients, using six normal bloods as controls.

Lead may be demonstrated in the excreta, and the tissues and organs of the body, but the salts of lead have a great affinity for the cartilaginous intercellular substance very similar to calcium salts, and "an ever-increasing percentage of the total absorbed lead comes to be stored in the bones."

The diagnosis suggested by the earlier symptoms may be acute appendicitis or other gastro-intestinal disorder, as in the first two cases here reported. Cases presenting convulsions, automatic movements, stupor and coma, resemble tuberculous meningitis. Other cases resemble cerebral or cerebellar tumor. The X-ray shadows of the growing bones of young children are of the greatest aid in diagnosis, diminishing in value after five years of age.

The prognosis must be guarded, as a rule, because lead is constantly appearing in the circulation and may occasion symptoms of meningo-encephalitis. If the intake of lead can be stopped, there is a better chance for recovery. As indicated above, failure to control the child who eats paint has been rather frequent among these patients. Lead encephalitis may leave grave residuals, mental and physical.

Differences of opinion exist as to the best means of treatment, aside from measures directed to the

control of symptoms, such, for example, as vomiting and convulsions. Calcium lactate by mouth, or calcium chloride intravenously may be used. Hunter and Aub have shown that much of the lead may be removed from the body by the administration every eight hours of parathyroid hormone. If a child keeps otherwise well, and takes in no more lead, it is possible for him to eliminate slowly what he has stored, and to recover.

REPORT OF CASES

Case 1.—Doris G., a white girl aged two and three-fourth years, was brought to Children's Hospital on June 23, 1933. She had been born at term after a normal labor. The birth weight was 6-13/16 lbs. Successfully vaccinated when six months old. At two years she had had whooping-cough; she had also had occasional colds. She had been breast-fed for two months, then modified cow's milk was used. Cod-liver oil and orange juice had been given since two months of age. She was now on a three-meal regimen. The mother brought the child because she was irritable and stuporous. She had a poor appetite, would eat little and had recently been vomiting twice a day after eating. She was constipated. She had a fairly good color, her nutrition was fair; her weight being 24 lbs., was 5 or 6 lbs. below the average; the height, 32 inches, was within normal limits. The physical examination was essentially negative. She was given castor oil and her food restricted. Three days later she returned; the vomiting had not recurred, but she was still constipated. The nervous symptoms were increased; headache had been present for three days; there was irritability; she was stuporous at times, at others sleepless. The mother stated that the child ate paint off her play pen, toys, bed, the banister rail, the woodwork in the house, especially about the doors and windows. This had been going on since she was one year of age.

With this history the probability of lead poisoning was suggested.

No lead line in the gums could be found, a magnifying electric otoscope being used. The urine was cloudy, acid, 1034, albumin 60 mg. per 100 c.c., a questionable trace of sugar, acetone and diacetic acid absent; microscopically there were occasional white blood cells, and a few red blood cells, but no casts.

Three X-ray pictures of the long bones showing progressive increase in the width of the lead zones at the growing ends over a period of 7 months, due to the continued ingestion of paint (see text for description).

1. Doris G., aged 2¾ years, June 26, 1933.
2. Doris G., aged 3 years, September 23, 1933.
3. Doris G., aged 3 years 4 months, January 27, 1934.

Date: June 26, 1933		*Sept. 27, '33*	*Nov. 11, '33*	*Jan. 26, '34*	*Feb. 3, '34*	*Mar. 17, '34*
Hb.	9.64 g., 57%	8.12 g., 48%	10.82 g., 64%	11.3 g., 67%	10 g., 59%	
Red cells	3,850,000	3,250,000	3,790,000	3,730,000	4,350,000	
White cells	10,200	9,300		12,275	18,400	
Lymphocytes	49%	24%		38%	37%	
Endotheliocytes	0	0		6%	0	
Polymorphonuclears	51%	76%		52%	63%	
Stippled red cells	0	0	0	0	0	Numerous; in some fields several present.

X-RAY FILMS (SEE REPRODUCTION)

June 26, 1933: The femur shows a dense shadow at the lower end of the shaft, 5 mm. in thickness; it is not uniformly dense. The greatest density is in the zone closest to the cartilage. The shadow diminishes in degree the further back from the junction of cartilage and shaft it goes, shading off in intensity, but definitely of a greater density than the shaft. A transverse line 1 mm. in thickness having the same contour as the lower end of the femur is found in the shaft 20 mm. from the epiphyseal line. This line shades off into the shaft on both sides of it. In the zone between this transverse line and the dense shadow at the junction of the shaft and cartilage there are less marked, but definite transverse lines, rather broad and of variable density. The lower end of the femur for a distance of 20 mm. thus presents a striking picture.

The two femurs are affected symmetrically. Both upper and lower ends of the tibiae and fibulae are similarly altered, presenting the dense zone at the junction with the cartilage shading off toward the shaft, the definite transverse line 10 mm. back from the epiphyseal line and increased but variable density in this zone.

October 17, 1933: Lower ends of radius and ulna of both arms present dense shadows 2 mm. in thickness at the ends of the shaft with a transverse line about the thickness of a line up in the shaft 10 mm. from the epiphyseal line.

January 27, 1934: Lower end of the femur: the zone of density at the end of the shaft has more than doubled in width to 11 mm., and its density is greater. The transverse line across the shaft is now 28 mm. from the end of the shaft, due to the growth of the bone. It is now no more than a line in thickness and has lost much of its density in seven months. Both ends of tibiae and fibulae show similar changes.

Progress Notes—September 13, 1933: "Mother states that the child still eats paint as previously described."

October 7, 1933: "Still chewing her crib and painted woodwork about the house."

November 11, 1933: "Mother reports that she has stopped eating paint."

February 3, 1934: "About two weeks ago ate paint off a toy. She has grown 4½ inches—to 36½ inches—and gained 6½ lbs.—to 32 lbs.—in the past seven months. Her anemia is a mild secondary anemia showing a little improvement in the seven months. She is still ingesting lead and as long as this continues, the outlook is serious."

March 17, 1934: "No eye evidences of lead poisoning, extra-ocular muscles, discs, nor retinae. Stippled red blood cells are moderately numerous, some fields containing several stippled cells."

Case 2.—Norma B., a white girl, aged four years, was first seen October 1, 1932.

She had been born at term, with instrumental delivery, the birth weight being 6 lbs., 10 oz. She was fed at the breast for seven to eight months, and then was given modified milk, with orange juice and cod liver oil. Dentition started at six months. She had walked at one year, and had begun to talk at fourteen months. She had had frequent colds. Vaccination at one and half years had been successful. Other infections included: whooping-cough at three years, chickenpox at three years, and occasional sore throats.

She was well developed and nourished, her weight being 37 lbs., 9 ozs.

Three days before (9-28-32) she had vomited several times and complained of abdominal cramps,

had no appetite, and was constipated. She had vomited similarly about a month before and had had other vomiting attacks for two or three years. The temperature was 99.8° and the pulse rate was 100. She did not appear sick. There was a systolic precordial murmur. Otherwise the examination was negative. The urinalysis was normal.

The leucocytes were 14,800, with polynuclear neutrophiles 89 per cent. She was in the Children's Hospital one day only at this time. Ten days later (11-11-32) she was readmitted with the following history: She had vomited twice since leaving the hospital. Since last seen she has been sucking the paint off her bed and chewing paint from woodwork, toys and elsewhere. As an infant she ate dirt; she has eaten paint from various articles. For the past eight-ten months she had intermittent, severe abdominal pain referred to the umbilical region. Her temperature during the next ten days in the hospital was normal except for a rise of a few tenths of a degree occasionally. She showed a slight pharyngitis; otherwise the physical examination was again negative. The urine showed a slight trace of albumin and a few leucocytes. The hemoglobin was 58 per cent (Newcomer) or 9.81 grams of acid hematin, the erythrocytes numbered 4,700,000, and the leucocytes 9,200, with 58 per cent polynuclear neutrophiles. Stippled red cells were searched for several times unsuccessfully. The stools showed no ova or parasites.

X-ray films of the femur showed a dense shadow 3 mm. wide at the junction of the shaft with the cartilage, shading off into the diaphysis. The lesion was symmetrical. The upper and lower ends of the tibiae and fibulae were similarly affected with somewhat narrower zones of density at the ends of the diaphyses.

Efforts to follow her up within the past few weeks disclosed that she had moved away from the city.

Case 3.—Lillian B., a colored girl, aged twenty-three months, was admitted to Children's Hospital on June 21, 1932, and was taken out by mother three weeks later on release. She was born at term, after a normal labor.

Her birth weight was 9 lbs., 2 ozs. She had been breast fed for three months, then artificially. The mother stated that the baby had been vomiting several times daily for the preceding three weeks. She refused her feedings, but the bowels were said to be regular.

Physical examination disclosed an apparently slightly sick infant, poorly nourished, weighing 19½ lbs., with an irregular, intermittent, low grade fever, maximum 101° by rectum, becoming normal in ten days and remaining so. She appeared to be anemic and somewhat dehydrated. The tonsils were large, cryptic and infected, with regionally enlarged nodes.

The examination was otherwise negative. Her appetite was so poor that feedings were forced. She vomited moderately and had a tendency to constipation. Tuberculin and Wassermann tests were negative. The urine showed a trace of albumin and a few leucocytes. The hemoglobin was 56 per cent (9.47 grams of acid hematin), the erythrocytes numbered 4,300,000, and the leucocytes 13,300, with 76 per cent polynuclear neutrophiles. Stippled red cells were not found. She lost two pounds during the three weeks she was in the hospital. The day before she was taken out on release by her mother, the leg, forearm and hand bones were radiographed. The characteristic broad area of density in the growing zones at both ends of the tibiae and fibulae and lower ends of the radius and ulnae were found. A follow-up after discharge revealed that she had died three days after removal from the hospital. The source of the lead which caused her poisoning and death was not ascertained.

SUMMARY

In chronic lead poisoning of early childhood, the occurrence of zones of increased density in the ends of the rapidly growing bones of the skeleton, as revealed by the X-ray, has been demonstrated as a practically constant finding.

Where symptoms of otherwise unexplained, recurrent, digestive disturbance, abdominal cramps, or meningeal irritation are present, the roentgenogram of the long bones provides a ready means for diagnosis of this condition.

Three cases of lead poisoning in children under five years of age have been presented, in which the diagnosis was made possible by means of X-ray examination of the long bones.

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THE CAROTID SINUS REFLEX AS A CAUSE OF FAINTING AND CONVULSIONS.

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The role of the autonomic nervous system in the control of the circulation has been recognized for some time. This system is in part made up of two sets of afferent nerve fibers, arising in the blood vessels throughout the body. The *pressor* fibers are sensory fibers which when stimulated cause a reflex vasoconstriction, increased blood pressure, and acceleration of the heart. Stimulation of *depressor* fibers give rise to a vasodilatation. decreased blood pressure, and slowing of the heart. The normal stimulus which gives rise to these reflexes is the intravascular pressure. For example, a general increase in blood pressure would stimulate the depressor fibers, setting up a reflex which would result in a vasodilatation, thus restoring the normal conditions. This interplay of pressor and depressor reflexes is so delicate that normally the heart rate and blood pressure are kept at quite constant levels.

Although these sensory fibers are scattered throughout the vascular system, there are regions where they are concentrated, forming a very sensitive point of control. Until recently, the most sensitive of these was thought to be located in the arch of the aorta, giving rise to the arotic depressor nerve. When the aortic pressure rises too high, there is set up a reflex resulting in slowing of the heart and vasodilatation.

Recent studies have shown that another highly specialized part of the pressor-depressor regulatory system is located in the carotid sinuses. Anatomically, the carotid sinus is a bulbous dilatation of the internal carotid artery just after it leaves the common carotid. In the adventitial coat of the artery at this point, there is a fine plexus of nerve fibers with specialized end-organs. These fibers run together to form a definite nerve, the intercarotid, which follows the glossopharyngeal nerve as far as the medulla and enters the vagus nucleus. Other smaller nerves run directly to the superior cervical sympathetic ganglion.

The function of the carotid sinus was not recognized until quite recently. As early as 1799, Parry[1] called attention to the fact that pressure over the carotid arteries resulted in a slowing of the heart, sometimes quite marked. About seventy years later, Czermak[2] made the same observations. He attributed this to direct mechanical stimulation of the vagus, which had been shown to be an inhibitory nerve to the heart. It was not until 1923 that Hering[3] showed that such slowing of the heart could be caused by pressure over the carotid sinus even when the vagus was separated from the artery, thus establishing the fact that a true reflex was involved. This reflex has its afferent limb in the intercarotid nerve, its synapses in the medulla, its efferent limbs through the vagi and the sympathetic system.

Since Hering's discovery, there has been a great deal of experimental work in animals. In general, the facts established are: 1.—that increased pressure in the carotid sinus causes a slowing of the heart, vasodilatation and fall in blood pressure, whereas decreased pressure in the sinus gives rise to the opposite effects; 2.—that all these effects are

abolished by denervation of the carotid sinus or section of the intercarotid nerves, because the afferent limb of the reflex is destroyed; 3.—that the reflex has both sympathetic and vagal efferent pathways, the heart rate being determined chiefly by vagal stimulation or inhibition, the vasomotor tone by sympathetic control. From what has been said earlier in the discussion, it is evident that this reflex is similar to those arising in the pressor-depressor fibers scattered throughout the vascular system. The concentration of these fibers in the carotid sinus forms presumably a delicate mechanism for the control of blood entering the brain.

Following this experimental work in animals, attention was focussed on the role of the carotid sinus in man. Several investigators have reported the effect on heart rate and blood pressure of stimulation of the carotid sinus.[4-5] In normal people, there is very little effect, perhaps a slight slowing of the pulse and fall in blood pressure. Subjects who have arterial hypertension or arteriosclerosis usually show a more marked response, sometimes a decided slowing of the heart and pronounced fall in blood pressure.

The only practical way to stimulate the carotid sinus in man is to press on it. The maximal effect of stimulation can be obtained only by pressure directly over the sinus. The head should be tilted slightly backward and to the side; in this position, the carotid sinus is usually located behind the angle of the jaw, at the level of the upper border of the thyroid cartilage.

I studied with Dr. Soma Weiss,[6] at the Thorndike Memorial Laboratory in Boston, a group of patients who complained of dizziness and fainting which could not be explained by any known pathology. We found that pressure on one or each of the carotid sinuses was followed regularly by dizziness, fainting and convulsive movements. All except three of these patients were above fifty-five years of age. They showed, as a rule, arteriosclerosis and evidences of coronary or other organic heart disease. We were able to divide these cases roughly into three groups, depending upon their responses to carotid sinus stimulation: 1.—those showing cardiac stand-still or sudden slowing of the heart, with or without marked fall in the arterial pressure; 2.—those showing marked fall in blood pressure without pronounced cardiac slowing; 3.—the three younger members of the group who showed extreme paling of the face followed by intense flushing, but without much slowing of the heart or fall in blood pressure.

In an attempt to explain the symptoms presented by these patients, we pursued a definite plan of study. Our findings proved that there existed, in each of these patients, a pathological hypersensitivity of the carotid sinus reflex. These studies also explained the mechanism of the carotid sinus reflex in man and shed some light upon the circulatory disorders giving rise to dizziness, fainting and convulsions. I shall give here merely a summary of these results. The circulatory measurements and case histories are recorded in our original paper.[6]

In most of these cases, pressure on the carotid sinus resulted in a marked slowing of the heart or fall in blood pressure, or both. In a few, the heart could be stopped altogether for an indefinite time, it seemed. We always released the pressure shortly after the patient fainted, so the longest cardiac stand-stills we have recorded were 15-17 seconds. Fainting and convulsions usually came on after an asystole of 7-10 seconds. Other cases who showed merely a slowing of the heart and not stand-still often suffered a systolic blood pressure fall of 50 or more millimeters of mercury; in such cases, the diastolic pressure was often too low to be recorded accurately.

The question was raised as to whether these symptoms of fainting and convulsions were due to mechanical occlusion of the artery, with resulting cerebral anemia. This was not the case, however, for occlusion of the artery below the sinus not only did not cause such changes, but in some instances resulted in a rise in blood pressure and speeding of the heart, presumably due to a decrease in the intrasinal pressure (cf. experimental work in animals).

It should be mentioned at this point that no harmful effects resulted from these procedures. The normal heart action and consciousness returned almost immediately after pressure was released from the sinus, and the patient was without discomfort or anxiety. Some of the experiments which I shall mention may seem hazardous, but they were always done with every precaution, and never caused any trouble.

Stimulation of the sinus induced striking changes in the electrocardiogram. These varied greatly in different patients, and even in the same patient at different times. The most striking change was the

long periods of cardiac stand-still, during which there was registered no movement of the heart. A feature of many of the tracings was evidence of block between the auricles and ventricles, varying in degree from a prolonged P-R interval to complete A-V block. In some cases the auricles continued to beat for several seconds after the sinus was stimulated, none of the P-waves being followed by QRST complexes; following this, there was evidence of ventricular activity, either as nodal rhythm, ventricular extrasystoles or bizarre complexes such as might be seen in ventricular fibrillation.

We were able to measure the cardiac out-put and circulation time in several of these patients by the dye injection method.[7] This was done with the patient in his normal resting state, and again while pressure was being made on the carotid sinus and the patient was on the verge of fainting. The second measurements always showed a pronounced slowing of the blood flow and decrease in the minute-volume out-put of the heart. Samples of blood were taken from the internal jugular vein while the patient was resting and again while pressure was being made over the carotid sinus. The second samples showed a significant decrease in oxygen and increase in carbon dioxide, indicating a cerebral anoxemia. These studies furnished a definite explanation for the development of fainting and convulsions.

In order to show this reflex to be an interplay of the vagal and sympathetic components of the autonomic nervous system, as had already been shown in animals, we administered drugs known to act rather specifically on these components. Adrenalin, in sufficient quantity to cause strong stimulation of the sympathetic system, abolished the reflex slowing of the heart and fall in blood pressure, as well as the symptoms of dizziness, fainting and convulsions. The depressor effect of stimulation of the carotid sinus had been over-come by artificial stimulation of the pressor nerves. Atropine, in doses sufficient to cause paralysis of the vagus, prevented the reflex slowing of the heart, for impulses travelling down the vagus were blocked. It did not entirely prevent the fall in blood pressure, for this fall was largely dependent upon a generalized vasodilatation, which in turn resulted from sympathetic inhibition.

We found it quite easy to infiltrate the wall of the carotid sinus with novocain by inserting a fine hypodermic needle into the tissues over the sinus until the wall of the artery could be felt to pulsate against the tip of the needle. This procedure regularly abolished the reflex, both the circulatory and clinical manifestations. In the same patients, we injected a similar amount of novocain into the carotid sheath lower down in the neck, to make sure that we were anesthetizing the carotid sinus and not the vagus nerve—this had no effect in blocking the reflex.

One of these patients had a small tumor mass over the right carotid sinus. When he turned his head in such a way as to press this mass into the sinus, there resulted slowing of the heart, fall in blood pressure, dizziness and fainting. This mass was removed under local anesthesia, and the carotid sinus stripped of its outer coat, thus denervating it. We followed him for some months after the operation. He had no more fainting spells, nor could they be brought about by pressure on this sinus.

DISCUSSION

In all these cases, at any time we were able to bring about dizziness and fainting, as well as the circulatory changes mentioned, simply by pressing on one of the carotid sinuses. These symptoms were identical with the spontaneous attacks described by the patients. The question naturally arises as to whether there was any causal relationship. In several of the patients (such as the one mentioned above), there were small tumor masses lying over the sinus which could, and did, cause pressure in that region. In another, the sinus was so sensitive that pressing his neck into a stiff collar brought on the circulatory and clinical manifestations cited. There were some, however, in whom it was inconceivable that sufficient pressure had been exerted against the neck to bring on their spontaneous attacks. The explanation for these probably lies in the fact that the carotid sinus represents only a part of the vast vaso-depressor system, any part of which may be extremely sensitive under pathological conditions. Further, it must be remembered that the sensitivity of reflexes may be decidedly greater under stress of excitement than in the quiet of the laboratory. It is conceivable that a sudden rise in blood pressure, acting on a highly sensitive vaso-depressor mechanism, would be over-compensated by a sudden slowing of the heart and fall in blood pressure. A striking case of this kind was reported

by Roskam.[8] It is highly probable that any number of strong impulses striking the pathologically sensitive vaso-depressor center would precipitate a like reaction.

There were mentioned earlier in this paper three young patients who showed little change in heart rate or blood pressure upon stimulation of the carotid sinus, but who did show extreme pallor of the face and fainting. Obviously these cases are unlike the others studied, and another explanation for their symptoms must be invoked. Heymans[9] has shown a connection between stimulation of the carotid sinus and changes in the cerebral vessels in animals. Weiss, Robb and Ellis[10] have shown that there exists a close relationship between the responses of the facial and cerebral vessels in man. So one can assume that in this group of cases the fainting is produced by sudden changes in the cerebral vessels as a result of stimulation of the carotid sinus.

An important clinical application of this work has to do with the control of paroxysmal tachycardia. Our success in stopping these attacks by pressure on the neck has always been attributed to mechanical stimulation of the vagus. It now seems certain that such a result is due to stimulation of the carotid sinus, and that better results would be obtained by pressure directly over the sinus.

The Adams-Stokes syndrome has come to be considered the result of a structural block in the Bundle of His, for in most of the carefully investigated cases such changes have been demonstrated. The findings in this investigation show that the Adams-Stokes syndrome may also be of neurogenic origin, a theory advanced by Charcot[11] in 1872.

It was suggested that such a powerful reflex mechanism might play a causative role in the convulsions of epilepsy. However, in a large number of epileptics so tested, no convulsive attacks could be elicited.

SUMMARY

1. The general structure and function of the autonomic nervous system, as regards control of the circulation, is briefly reviewed.

2. The carotid sinus reflex is shown as a highly specialized part of the pressor-depressor system. Its response to stimulation in normal individuals is shown to be slight.

3. There is described a group of patients in whom stimulation of the carotid sinus caused pronounced circulatory changes, with resulting dizziness, fainting and convulsions. These clinical and circulatory changes are explained, in the light of experimental evidence, as being due to an abnormal sensitivity of the carotid sinus.

4. Certain circulatory disorders are discussed in relation to the carotid sinus.

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A SELF-RETAINING VAGINAL RETRACTOR.

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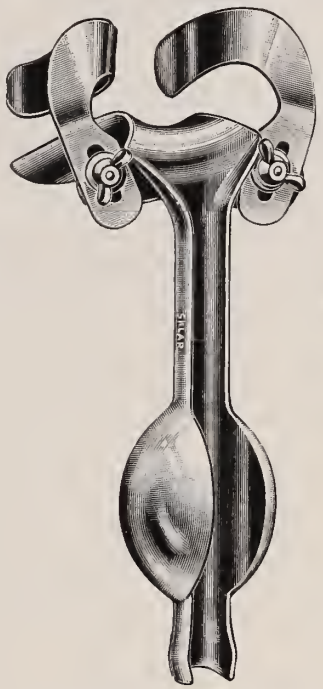
Richmond, Va.

In plastic surgery upon the vaginal walls and cervix the end-results depend to a great degree upon adequate exposure. Even with two assistants at the command of the operator there is frequently the need of an additional pair of hands. This need invariably arises because much of the available assistance is utilized in providing exposure.

To overcome this difficulty the self-retaining vaginal retractor pictured here has been devised. The instrument is simply a weighted vaginal speculum of the Auvard type to which have been affixed two lateral retracting blades. These blades are independently adjustable in vertical and horizontal planes. They are removable. Because of the weight of the vaginal speculum, the instrument when in place is stable.

This retractor has been advantageously employed in operations upon the anterior vaginal wall, the cervix and in vaginal hysterectomies. Its use has been found to greatly facilitate operative procedure. The retractor has proven equally adaptable in cases



in which there is marked vaginal relaxation and in those in which the vagina is small and shallow.

It is of no value for work upon the posterior wall.

The instrument is manufactured by J. Sklar & Company, of Brooklyn, N. Y.

Professional Building.

A MODIFICATION OF THE BELLY TROCAR.

C. R. IRVING, M. D.,
Saltville, Va.

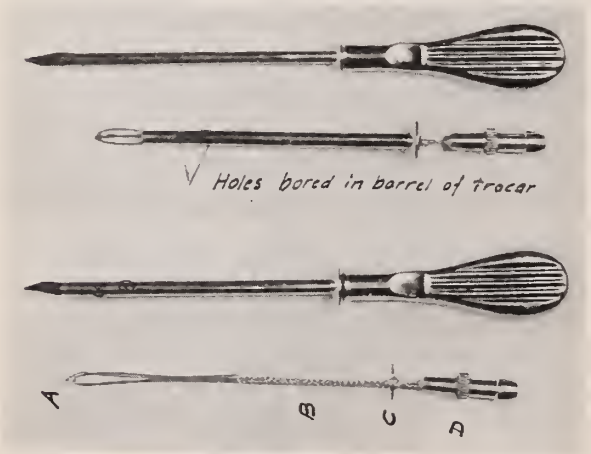
The lady gazed with righteous indignation at the eight pickaninnies gathered around her laundress.

"Cindy, who is the father of all these children"?

The ample colored woman straightened up from her washboard and favored her employer with a knowing, tolerant smile:

"Miss Sally, when 'de ole rabbit run th'u 'de brier patch we ain't axed what brier scratched her."

So, it is much the same with old lady "Necessity." How many children she has had no one knows, and all of them have been named "Invention." The sire of these has been ignored as fully as was the brier in the colored woman's brier patch.



The belly trocar herein described has been in use at the Mathieson Hospital for the past year and appears to work fairly well. The accompanying cuts are self-explanatory. The barrel is drilled through its diameter on the arc of the circle, the holes being "dodged" on the arc in order that the barrel may retain sufficient strength. The drainage obturator is simply two Beck-Schenck tonsil snare wires soldered at right angles to each other on the tip of the loop, A. These loops are then bent in until it will pass through the bore of the barrel. More soldering is done along the twisted portion of these wires at B, giving a shaft with moderate rigidity. A short cross-wire is attached at C which prevents the obturator from passing too deeply into the abdominal cavity. On the extreme distal end, D, is soldered an old stethoscope earpiece, or a reducer for a large syringe or what have you.

The method of employment is obvious.

Correspondence

Request for Report on Mental Patients.

TO THE EDITOR:

I notice that the VIRGINIA MEDICAL MONTHLY is urging a change in the commitment form for Virginia State Hospitals. I am indeed glad to know some steps are being taken. However, I am very much interested in having State Hospitals for the Insane give us a brief resumé and diagnosis and probable therapeutic measures to be used in cases sent in. We rural general practitioners are interested in mental cases, particularly the preventive side. However, we commit these cases and hear nothing about them afterwards.

Wouldn't such a report as all other hospitals send referring family physicians enable us to recognize and prevent early mental cases?

EARL J. HADEN, M. D.

Ore Bank, Va.
April 3, 1935.

Miscellaneous

Report of Survey of Obstetrical Facilities of Norfolk, Virginia.

The Norfolk County Medical Society some time ago appointed a committee of three to conduct a survey of the obstetrical facilities of Norfolk. Their report made on March the 4th of this year showed such a grasp of the question and brought out so much suggestive information, that the Society thought it should be put in more permanent form and made available for the information of others who might thereby be stimulated to an effort to better conditions generally. With this in view, the Society voted that the Secretary of the Society, Dr. Lockburn B. Scott, submit the following report for publication in the MONTHLY:

Maternal and Infant Mortality of the City of Norfolk

	1932	*1933*
TOTAL BIRTHS REGISTERED	2,342	2,217
White	1,583	1,428
Colored	759	789
Non-residents	81	111
Births for Norfolk proper	2,261	2,106
HOSPITAL DELIVERIES		
White	1,032	892
Colored	82	55
HOME DELIVERIES BY DOCTORS		
White	519	518
Colored	116	252
MIDWIFE DELIVERIES		
White	32	18
Colored	561	482

MATERNAL DEATHS

	1932	*1933*
In pregnancies before the fifth month		
White	3	4
Colored	1	4
In pregnancies beyond the fourth month		
White	5	4
Colored	4	5
(Non-resident deaths, which were excluded)	6	1

MORTALITY RATES

	Per 10,000 Births
Total for Norfolk, 1932-33	69
Among whites	56
Among colored	92
State of Virginia, 1927-28	68
Country at large, ranges	65 to 70

Grade of prenatal care that was given the above 18 resident full-term patients, graded in accordance with the State Survey (*Virginia Medical Monthly*, July, 1933):

Grade of care	1	2	3	none
Number patients	3	4	0	11

Attended first, by (a) doctor, 9; (b) a clinic, 2; (c) by midwife, 7. One colored patient died of sepsis three weeks postpartum without being seen by a physician. Her certificate was signed by the coroner.

Hospitalization: 15 of the 18 patients went to hospital; with 4 it was *planned,* with 11 the admission was "emergency." Three colored women died at home.

Causes of death of these 18 cases (some had combinations): Sepsis, 6; toxaemia, 6; hemorrhage, 3; dystocia, 3.

INFANTS DYING UNDER 10 DAYS

	1932	*1933*
White	28	35
Colored	19	29
	47	64
STILL-BIRTHS		
White	44	35
Colored	88	74
	132	109

Midwives registered: White, 4; colored, 31. No training nor supervision.

PRENATAL CLINICS

There were three prenatal clinics conducted. These were for white patients only.

PROTESTANT HOSPITAL CLINIC

	1932	*1933*
New patients annually	46	84
Total clinic visits	233	516
Average visits per patient	5	6.1
Delivered in hospital	46	84

KING'S DAUGHTERS, IN BRAMBLETON AND LAMBERTS POINT SECTIONS

New Patients Annually, in both	167	175
Total clinic visits	731	836
Average visits per patient	4.4	4.8
Delivered in hospital	72	21
Total patients supervised in clinics	213	259

The following information was obtained by questionnaire:

What percentage of patients come before the fifth month? One estimated "25%"; the other said "very few—four or five a year."

Once started, did most patients come regularly? "Yes."

Were all patients given a thorough general examination? "Yes."

Were routine Wassermanns taken? "Yes"—except in the hospital clinic prior to 1933 this was delayed until patient was admitted for delivery. The exact percentage of positives was not obtainable but King's Daughters reported five positives in the two years.

Were prenatal leaflets of instruction given out? Not until the hospital started them, in 1933.

Were pelvic measurements regularly taken? External ones, yes; internal ones, irregularly. And the diagnosis of the pelvis was not always recorded.

Was position of the baby recorded, in the ninth month? The hospital reports "yes"; King's Daughters reports "not regularly."

Were patients urged to return for post-partum examination? Yes.

About what percentage would so return? One says "100%"; the other estimates "95%."

THE STERILE BUNDLE PREPARED BY KING'S DAUGHTERS

Contents

Douche pan	1 rubber sheet	Green soap
2 basins	2 paper pads	Vaseline
1 irrigating can	36 vulval pads	Gauze
2 sheets	1 pound cotton	Ether, ¼ pound
3 towels	Lysol	Chloroform, 2 ounces
1 pair leggings	Boric acid	Ergot, ½ ounce
2 bands	Olive oil	Cord dressing
1 doctor's gown		

Cost $6

	1932	*1933*
Number issued for private cases	77	55

PERTINENT FACTS NOTED FROM THE ABOVE

1. The highest mortality is among the colored population, where no prenatal care is given and where the deliveries are nearly all done by midwives in the home. But racial differences do not altogether answer the question, as white deaths exceeded the colored 16 to 14.

2. Of the 18 mothers, residents of Norfolk, who died in pregnancy beyond the fifth month, 11 had no prenatal care. Of these 11, 3 were white.

3. Of these 18 who died, 7 were first attended by a midwife, who therefore had the chief responsibility. One woman died without any medical attendance.

4. Fifteen of the 18 were taken to hospital, but 11 of them went as *emergency* cases. This is a reflection on their prenatal diagnosis. (Five of them were taken to hospital after delivery.)

5. Reviewing the detailed information regarding those 18 deaths in late pregnancy, it would seem that, with good prenatal supervision and prenatal diagnosis, at least two-thirds would have been prevented. Our committee members, examining the data independently, judged as follows—13, 12 and 16 seem to have been preventable.

6. Though prenatal clinics are provided for the indigent, it is clear that a high percentage of those who died did not receive prenatal care. If this group may be used as an index, Norfolk continually has hundreds of pregnant women who are not receiving supervision.

7. Of the other 12 women who died in early pregnancy, 7 died of sepsis following miscarriage or abortion. This bears out our impression that the public is not awake to the danger of such terminations. People need warning and instruction.

8. Thirty-five midwives, without training, are being authorized to practice in Norfolk, and they are delivering 500 cases a year.

9. Comparatively few sterile bundles are being used in home deliveries, only about one in every ten cases attended by physicians.

10. If two-thirds of the maternal deaths were preventable, it is reasonable to assume that two-thirds of the infant deaths, the still-births, and the disabling injuries to the mothers, could have been prevented.

How Our Members Answered the Questionnaire

Number of replies received, 70. Membership, 170

1. "Do you urge prenatal care to pregnant women?" Except for two who did not answer it directly, all of the 70 said "Yes."

2. "Do you yourself attend obstetrical cases?" 39 replied "yes."

Those 39 answered as follows:

3. "To what degree do your patients co-operate for prenatal care?" 30 answered "well"; 9 said "medium"; none said "poorly."

4. "Do they seem to understand the importance of prenatal care?" 31 said "yes"; 3 said "No"; 5 said "generally."

5. "What is their main reason for neglecting it?" Many did not answer, but 4 said "futility"; 12 said "too bothersome"; and 4 gave "expense."

6. "Do you charge directly for each prenatal visit, or do you include these visits in a lump-fee for the case?" 36 include them in a lump fee.

7. "Do you use a pelvimeter on most of the prenatal cases you see?" All except three, answered "Yes."

8. "Do you routinely try to diagnose the position of the baby before labor starts?" All except one answered "yes."

9. "Is your record system satisfactory?" 29 said "yes"; 9 said "no."

10. "Do you consider it harmless to use pituitrin for the sole purpose of hastening delivery?" 19 said "yes"; 19 said "no." "Low forceps?" 16 said "yes"; 21 said "no."

11. "Do you have patients come to the office for vaginal examination before final discharge?" All except 2 answered "yes."

12. "Do you attend deliveries in the home?" 31 replied "yes."

This group of 31 gave the following replies:

13. "When you foresee complications, do your patients readily accept your advice about going to hospital for delivery?" 6 answered "no."

14. "When indigent patients have complications, do you have much trouble getting hospital care for them?" Only 4 said "yes."

15. "Are you satisfied with the equipment in your obstetrical bag?" 8 said "no."

16. "Do you routinely have the field clipped or shaved, scrubbed, and painted?" To this, 20 answered "yes"; 5 answered "no"—3 shave, 2 clip, 5 paint the field, and one indicated that he used scrubbing only.

17. "For home deliveries, do you consider a sterile bundle worth while?" 28 replied "yes"; 1 said "no."

18. "Are the available sterile bundles satisfactory to you?" 24 answered "yes"; 3 said "no"; one mentioned the expense, and 4 gave a list of what they thought to be a desirable and practical bundle.

19. "How many post-partum visits do you routinely make on normal cases in the home?" The replies average about ten; none stated less than five.

General Needs

1. The public still needs much education regarding the value of prenatal care. They are not yet sold on it. When a child is expected, some still seem unwilling to give prenatal care precedence over amusements and luxuries.

2. No one but physicians can convince people that prenatal care is worth while. The argument of others is lost, if the family doctor makes light of it, or fails to show interest.

3. More prenatal clinics, especially for colored people, appear to be needed. Prenatal clinics are for the supervision of patients during pregnancy, for the education of the public, and for the experience and training of such physicians as care to go there and assist; they are not intended for treatment nor for confinement care.

It is hoped that the plan now projected, for delivering normal indigent cases in the home by university students, will greatly extend the usefulness of the clinics and bring about the delivery of more of the abnormal cases in hospital. The plan should reduce the number of deliveries by midwives.

4. Better co-operation between doctors and prenatal clinics is needed. Doctors should take pains to send their indigent patients to clinic if they do not wish to spend time with them. On the other hand, the clinics

should refer back to the family physician for delivery any cases that are able to pay even a part fee. The family doctor should have at least the first chance at refusal.

5. If the midwives are to continue practice, a plan should be evolved for giving them training and supervision.

SPECIFIC NEEDS ON THE PART OF THE PHYSICIANS

1. Doctors should be prepared to give better prenatal care. They, themselves, should be better informed regarding its need and its advantage, and should take much more pains to teach it to patients.

2. It is of vital importance that, whenever a doctor accepts the care of an obstetrical patient, he have an established routine for her minimum care. The "Standards of Prenatal Care" recommended by the Committee representing our National Societies, we recommend for guidance. (See "Standards of Prenatal Care," *Amer. Jour. Ob. & G.*, Vol. XII, No. 3, September, 1926.)

3. A definite written diagnosis of the pelvis, and of fetal position, at the beginning of the ninth month, is an attainable goal for every practitioner. The general adoption of this practice, by our members, would quickly elevate the standard of obstetrics practiced in our community.

4. To this end, more consultations in the ninth month in doubtful cases would be both a credit and an advantage to all concerned.

5. Better record systems are needed for private work.

6. For home deliveries, better equipment is needed in obstetrical bags.

7. We need to agree on a sterile bundle of minimum contents and cost. Then, whenever we plan with a patient a home delivery, we should insist that bundle be procured and held in readiness.

8. Your committee believes that, except in unavoidable emergency, obstetrical operations should not be done in the home. The danger of infection is too great, and satisfactory repair is impossible. Whenever interference becomes necessary, the case should be transferred to hospital.

9. Through noting the large number of death certificates signed "cancer of the uterus" (28 per year), it is evident there is need for better post-partum follow-up. Through treatment of the cervicitis that so commonly follows child-birth, and proper periodic examinations, the incidence of cancer of the cervix could unquestionably be reduced.

In conclusion, your committee feels that, although much good work is being done, our standard of obstetrical work is no higher than the average for the country as a whole, and a great opportunity is presenting itself to the profession.

It is true that the public is responsible for many deficiencies, and financial conditions play a large part, but nevertheless people will always look to doctors for leadership in these matters and be guided by the standard the doctors set. The present period of re-adjustment is an opportune time for us to improve our equipment and establish a higher standard of work. Incidentally this would bring back some of our prestige.

Our standard of obstetric practice can, and should be, raised.

Respectfully submitted,
C. J. ANDREWS,
R. B. NICHOLLS,
P. E. THORNHILL, *Chairman.*

Analyses and Selections

Counter Prescribing.

The Virginia Pharmacist has reprinted the following by I. Trachtman, Ph. G., of Brooklyn, from the *I. P. A. Voice*:

We, pharmacists and physicians, lay our woes and our miseries at each others doors. We hurl accusations and antagonize each other, while those who are the *cause* of most of our troubles look gleefully on and rake in millions in profits that we create with our sweat and blood.

During a discussion recently, a physician remarked to me: "If half of the counter-prescribing druggists were put in jail the physicians would be able to make a living," to which I all but shouted in reply, "If only half of the physicians now prescribing or advertising proprietaries and patents to their patients went back to *real* prescription writing—back to the U. S. P. and N. F.—no pharmacist would want to or have to counter-prescribe, and the physician himself would not only make a better living; but he would also retain the respect of his patients." We look at one another's excited faces and suddenly realize—that we were really old friends, not deadly enemies.

I invited the doctor to my Rx room and there we had a lengthy heart to heart talk. I took down a file of recent Rxs and asked the doctor to look through them, and then—for the first time—my friend realized *why druggists counter-prescribe.* He was not only astonished, he was actually shocked at the revelation. And as he wondered, I spoke. I told him of a case, where I had convinced a woman who had a sore throat of the danger of self-medication. She had gone to a local throat man, paid him $5.00 for the visit and came back with a prescription calling for 3 ozs. Glycothymoline. She had read the name—priced the item in a cut rate store, but because of my good advice to her I was entitled to her patronage. She came back and un-

der protest paid me 25c for the bottle that cost me 20c. I told him of a patient of his, for whom he had at one time prescribed *Empirin* tablets, when she was in bed with the grippe. The woman's son came into my store—bought a quarter's worth of Empirin tablets—showed me the Rx and asked if that was the right article. Since that day every neighbor in that apartment house has been buying and using Empirin for all their ills. The doctor had lost innumerable calls and I the prescriptions he might have written. Was it so hard to write out the three component ingredients of this proprietary? Could not the doctor have taken a minute longer to write a formula of his own?

Would it not be more ethical and safe for the patient *not* to know what she was getting in her prescription? I talked on and the doctor listened. I told him of a more recent case where a "specialist in diseases of women," handed a patient coming from my neighborhood a prescription for 100 tablets of Lutein suggesting to her that should her druggist ask for more than a specified price (for this excessively expense proprietary) that she try *Macy's*. (Macy made the sale.)

The doctor listened—and he looked with interest when I showed him shelf upon shelf full of expensive patent pills, tablets and powders which were called for once or twice by some physician and never repeated—now altogether unknown and forgotten and for which I had not even been able to collect the initial cost. I showed him hundreds of dollars worth of proprietary junk buried on my shelves and deteriorating through age—junk on which so-called "ethical—reputable houses" garnered in huge profits from the toil of the enslaved pharmacists through the folly of the unknowing and unsuspecting prescribing physician.

He now realized that not only had he been used as a tool to hurt and enslave the man he most depended on for cooperation in the treatment of his patients, but that gradually he had been ruining his own practice and destroying the confidence of his patients in his superior wisdom and knowledge in things medical. The question he now asked was: "what can we *both* do to combat this common enemy of ours? To reestablish our old confidence in each other and the confidence of the public in both of us?" And because we had aired our grievances and our faults, the remedy—we agreed—seemed surprisingly simple.

Doctor: Rediscover the U. S. P. and N. F. Make use of your knowledge when prescribing for your patients. Do not let the manufacturers and their "detail" specialists befuddle your brains with wonder tales of their ever "new" preparations which in most cases are nothing but old stuff under a new name or disguised in a new package.

Pharmacists: On you falls the bigger share of the burden of accomplishment. *Stop counter-prescribing, preach against self-medication, send advice-seekers to the physician* where they rightly belong and *visit the doctors* in your community yourself. Discuss with them all matters of interest to them and you.

Only by amicable cooperation between physician and pharmacist can the war be ended and peace and good will be once more restored.

Acute Subapical versus Insidious Apical Tuberculosis.

In earlier communications attention was called to subapical tuberculosis based on a study of 200 cases. Now that the series has been brought up to 1,000 cases the conclusion that progressive and destructive pulmonary tuberculosis usually begins suddenly with exudative subapical lesion seems justified. While later statistical material shows some change over that of the 200 original cases, the conclusions drawn from the original report are restated with additional support.

The older concept of pulmonary tuberculosis is that it usually begins quite incipiently with a small lesion in the apex of the lung and spreads caudalward, and that the symptoms and physical findings are so elusive as to escape all but the keenest diagnostician. The majority of patients present themselves first with far advanced disease; incipiency, as seen in the apical lesion is seldom found. The authors believe the acute subapical lesion is the more frequent as the truly incipient lesion and that such lesions often develop into far advanced disease before they are recognized for the reason that they increase rapidly in extent.

The study is not to be construed as an attempt to classify pulmonary tuberculosis into confusing sub-groups, but rather as a means of throwing light on the diagnosis, treatment and prognosis through a proper appreciation of the history of onset and course, and the location and nature of the disease.

SUMMARY

1. Progressive and destructive pulmonary tuberculosis usually begins suddenly with exudative subapical lesions.

2. Lesions, far advanced, and excavations frequently develop within less than six months.

3. Processes leading to active progression and to excavation are most frequently associated with acute symptoms.

4. Physical signs and symptomatology (traditionally described as characteristic for "incipient tuberculosis") are misleading for the detection of truly incipient subapical acute processes.

(*Douglas, Nalbant and Pinner, Am. Rev. of Tuber., February, 1935.*)

Public Health Statistics

I. C. RIGGIN, M. D.

Health Commissioner of Virginia

The communicable disease report received at the office of Dr. G. F. McGinnes, State Epidemiologist, during March, 1935, showed the following cases compared with the same month in 1934:

	1935	*1934*
Typhoid and Paratyphoid Fever	9	14
Diphtheria	77	126
Scarlet Fever	271	208
Measles	5,444	7,221
Meningitis	21	24
Poliomyelitis	1	4
Rocky Mountain Spotted Fever	0	0
Typhus Fever	0	0
Undulant Fever	5	3
Tularaemia	0	1
Smallpox	1	1

TRICHINOSIS

Recently a physician in one of our Virginia cities contracted a severe case of trichinosis. Much difficulty was experienced in arriving at a diagonsis since neither he nor his attending physicians suspected the nature of the infection until late in the course of the disease. Subsequent to his recovery, physicians in this town have seen seven other cases of trichinosis whereas previously they had seen none. Since this is a common experience with physicians in both hospitals and private practice, it seems desirable to call their attention to the probable occurrence of undiagnosed cases in various part of the State.

It is of interest that recently a number of men have found larvae of *Trichinella (Trichina) spiralis* in the diaphragm of 5-25 per cent of postmortem examinations made in widely separated parts of the country, i. e., Boston, Massachusetts; Rochester, New York; Rochester, Minnesota; and St. Louis, Missouri. The findings were the result of routine hospital autopsies and examination of cadavers furnished the anatomy department of one medical school for student dissection. There was, therefore, no selection on the basis of histories—in fact where histories were available there was no suspicion of *Trichinella* infection. One might interpret these findings to mean that a considerable proportion of the population, at least in the areas studied, acquire sub-clinical cases of trichinosis at sometime during their lives. It seems altogether probable that many of the infections with *Trichinella spiralis* are so light as to elicit no symptoms or to cause only a passing illness so mild that a physician is not consulted. Undoubtedly many of the mild cases and some severe cases in Virginia are not diagnosed.

Since the various symptoms and diagnostic features are definitely related to the course of development of the worms in the body, it is desirable to present a brief resumé of the method of infection and life cycle of the worms. Most of the human infection is acquired from eating raw or insufficiently cooked pork (infections from bear meat have been reported) containing infective larvae encysted in the muscles.

NOTE:—Pigs are infected usually by eating rats or scraps from pigs containing the infective larvae in the muscle.

In the small intestine the encysted larvae are digested free of the muscles, grow to sexual maturity, start burrowing in the intestinal mucosa, and copulate in 3-5 days. After copulation the males pass out of the body with the feces and the females burrow for half or more of their length into the mucosa and submucosa of the intestine. About the fifth day after infection the females begin to discharge larvae through the vulva, which being near the anterior end of the body is burrowed in the tissues. The discharge of larvae usually continues up until the tenth or fifteenth day but sometimes even for several weeks after infection. Most of the larvae reach the lymphatics and are carried thus to the blood stream and by the blood to various striated muscles. They begin to appear in the muscles about the eighth

day after infection and active migration in the muscles usually continues up to three to five weeks after infection. The process of encapsulation starts early; most larvae are encapsulated by the sixth week.

Clinical Symptoms and Diagnosis.—The first symptoms, which are usually overlooked, occur while the worms are still in the small intestine. An acute diarrhea accompanied by abdominal discomfort, nausea, and vomiting may appear at any time up to the third or fourth day after infection. Often this attack is mild or of such short duration (10-24 hours) that no particular significance is attached to it. Usually in such cases the diagnosis is "food poisoning" or "intestinal flu," and treated accordingly. If the gastro-intestinal symptoms persist two or three days accompanied by fever a provisional diagnosis of typhoid is frequently made. An ocular oedema usually appears between the third and sixth day after infection. It may be noticeable while the patient is still suffering from the gastro-intestinal disturbance. In the absence of gastro-intestinal symptoms the ocular oedema may be the first physical sign of the infection and may remain for several days or even a week or longer.

In most cases a general eosinophilia is elicited; often it is evident by the third or fourth day but usually not well marked until after the fifth day when larvae are being discharged into the circulation. In most cases the eosinophilia will exceed 20 per cent by the sixth or eighth day and may eventually reach 50 per cent or more. The eosinophilia may remain for many months after all other evidence of the disease has disappeared. The prognosis is bad in those few cases in which *no eosinophilia* develops. Most of the cases with a marked eosinophilia recover.

As the larvae enter the striated muscle (5-10 days after infection) a tenderness, both upon movement and upon palpation, usually develops. In light infestations the tenderness may never develop or be so slight that no significance is attached to it. In more severe cases the muscle pains continue from five to eight weeks after infection, being most severe during the second and third weeks. Most notably effected are the mastication, tongue, shoulder, calf, diaphragm and intercostal muscles and in the most severe cases the cardiac muscles. In fatal cases death usually occurs between the third and sixth weeks. In such cases the patient runs an almost constant fever of 101-104° F., becomes delirious, comatose and dies from pulmonary and cardiac decompensation. This is brought about by direct destruction of cardiac muscle, damage to the respiratory muscles and perhaps by toxic products of the worms.

Usually when the patient recovers all symptoms disappear within six weeks. The larvae which reach the cardiac muscles re-enter the circulation or are killed and absorbed and apparently little permanent damage is done to the heart. The larvae in the skeletal muscles are encapsulated by host tissue and give no further trouble.

Of the laboratory aids to diagnosis the differential count is most commonly employed. The finding of an eosinophilia is *suggestive* of possible trichinosis even in the absence of clinical symptoms but *is not proof* of this infection since it occurs with other worm infections, asthma, et cetera. To confirm a diagnosis of trichinosis, a biopsy is usually done. A small piece of deltoid or gastro-nemus is removed near the tenderous insertion and examined, pressed or sectioned, for trichina larvae. This is effective after the third week. More recently serological and skin tests have been developed. The most practical at present is the skin test which McCoy has shown is about 80 per cent effective after the second week of infection. The trichina antigen gives a cross reaction with the whipworm, *Trichuris trichiura,* infections so that its value is doubtful where the whipworm incidence is high. A stool examination should always accompany a positive reaction to rule out possible whipworm infection. In positive cases the intradermal injection of 0.1 c.c. of 1:1000 or at most 1:500 dilution of trichina extract produces in twenty minutes a well marked blanched wheal surrounded by an erythema. Unfortunately the antigen is not yet commercially available.

No effective specific treatment is known. The patient should be made as comfortable as possible and treated symptomatically. A heavy infection confers almost complete immunity to reinfection for a year or more.

Prevention of infection is relatively simple. Since, with rare exceptions, human infection comes from pork or pork products a little precaution in the eating of these will prevent infection. Cooking such meat until all natural color is gone will kill any larvae present and make the meat perfectly safe to

eat. Hamburgers, which frequently contain pork scraps, are common sources of infection if inadequately cooked. No attempt is made in the country to inspect pork for *Trichinella* infection since any practical method of inspection known will miss light infections and thus give a false sense of security. Refrigeration of pork is required in government inspected abattoirs which kills *most* larvae. However, a great deal of pork is killed on the farm or in small uninspected abattoirs so the only guarantee against infection is to see that *all pork* eaten is *thoroughly cooked.*

Woman's Auxiliary to the Medical Society of Va.

President—MRS. JOSEPH BEAR, 3012 Monument Ave., Richmond.
President-Elect—MRS. FLETCHER J. WRIGHT, Petersburg.
Recording Secretary—MRS. JAMES B. STONE, 2042 Park Ave., Richmond.
Corresponding Secretary—MRS. AMBROSE MCGEE, 4107 Kensington Ave., Richmond.
Treasurer—MRS. REUBEN F. SIMMS, 2034 Park Ave., Richmond.

Attention!

AUXILIARY TO THE AMERICAN MEDICAL ASSOCIATION
PLACE—TRAYMORE HOTEL, ATLANTIC CITY
TIME—JUNE 10-14, 1935

The thirteenth annual session of the Woman's Auxiliary to the American Medical Association will convene on Tuesday morning, June eleventh, at nine o'clock, at the Traymore Hotel, Atlantic City, New Jersey.

The second meeting of the session will be called to order Wednesday morning, June twelfth, at nine o'clock at the Traymore.

Mrs. Joseph Bear, Virginia State President, urges wives, widows, daughters, and sisters of all doctors to make an earnest effort to attend this convention.

The Canadian Medical Association will meet with the American physicians at this great resort. We all hope to make the Canadian women feel our real welcome.

Regardless of whether you are Auxiliary members, you are invited to the sessions which we hope will be most interesting this year.

Mrs. Robert W. Tomlinson, President of the Woman's Auxiliary to the American Medical Association, extends a hearty welcome and is most desirous of a large representation of delegates and visitors from the State of Virginia.

Alexandria Auxiliary.

The Alexandria Chapter of the Woman's Auxiliary was organized May 22, 1934, with four members present. The president, Mrs. Llewellyn Powell, now reports a membership of twenty and hopes to increase this number soon.

Some of the activities of this Auxiliary have been: Entertained members of State Auxiliary at annual meeting in October; in November, they contributed paint for the interior of the Day Nursery, and in December gave twenty books to start a library for this Nursery; in January, the Washington, D. C., Auxiliary entertained the Alexandria Auxiliary with a beautiful tea; and in March the Alexandria members hemmed fifty tea towels for the Alexandria Hospital. This Auxiliary has just adopted Constitution and By-Laws in conformity with those of the State Auxiliary.

They are to be congratulated upon the splendid progress made since last May.

The Auxiliary to the Lynchburg Academy of Medicine,

With Mrs. J. P. Clark as its president, is doing splendid work. A bridge party was recently held which netted $44.00.

Twenty dollars has been contributed to the milk fund in a local school, and food and shoes have also been supplied to needy school children.

Books in the Braille system are being purchased for the blind.

Plans are under way for a bridge party to be given early in May.

The secretary, Mrs. Ernest G. Scott, reports a membership of twenty-nine members.

The Auxiliary of the James City-New Kent Medical Society

Held its annual meeting at the home of Mrs. A. M. Sneed, in Toano, Va. Mrs. Tucker gave us a report of the Executive Board meeting held in Richmond, and urged us again to subscribe to *"Hygeia."* We decided the present New Kent, Toano and Matthew Whaley schools each with a year's subscription.

New officers elected are as follows: President, Mrs. A. M. Sneed, Toano; vice-president, Mrs. T. B. Henderson, Williamsburg; secretary, Mrs. B. I. Bell, Williamsburg; and treasurer, Mrs. E. B. Kilby, Toano.

Our retiring president, Mrs. J. R. Tucker, has been untiring in her efforts to build up this Auxiliary which is only two years old.

(MRS. L. V.) MABEL HENDERSON,
Reporter.

The Auxiliary to the Warwick County Medical Society

Held its regular meeting at the Elizabeth Buxton Hospital on Wednesday, April 10th. This being the first meeting under our new president, much business was transacted and interest and enthusiasm was keen. The new committees were appointed, including the one which is to draw up our Constitution.

We were pleased and honored to have with us at our Annual Luncheon Meeting in March, Mrs. Joseph Bear, State President, Mrs. Ambrose McGee, State Corresponding Secretary, and Mrs. Reuben F. Simms, State Treasurer. Mrs. Bear gave a most inspiring talk on the importance and purpose of the Medical Auxiliary, and installed the new officers with helpful suggestions to each. Mrs. McGee and Mrs. Simms spoke to us briefly of the duties of their respective offices.

The officers installed were:

President, Mrs. Harold W. Potter; vice-presidents, Mrs. W. W. Falkener, and Mrs. W. S. Snead; recording secretary, Mrs. M. B. Beecroft; corresponding secretary and treasurer, Mrs. Thomas Hunnicutt, Jr. All officers are of Newport News.

CECIL G. HUNNICUTT (MRS. THOS., JR.)

Truth About Medicine

In addition to the articles previously mentioned, the following have been accepted by the Council on Pharmacy and Chemistry of the A. M. A.:

The Calco Chemical Co.
  Aminoacetic Acid.
The Cutter Laboratory
  Diphtheria Toxoid Alum Precipitated, Refined.
Lederle Laboratories, Inc.
  Scarlet Fever Streptococcus Immunizing Toxin.
  Scarlet Fever Streptococcus Toxin for the Dick Test.
Eli Lilly & Co.
  Metycaine Tablets, ½ grain.
Ophthalmic Ointment Metycaine, 4 per cent.
Parke, Davis & Co.
  Capsules Ortal Sodium, 5 grains (0.3 Gm.)
  Meningococcus Antitoxin.
E. R. Squibb & Sons
  Ipral-Amidopyrine Tablets, 4.33 grains.
  Ipral Sodium
    Ipral Sodium Tablets, 4 grains.

PROPAGANDA FOR REFORM

Adrenal Cortex Extract—After a consideration of the several names suggested for the extract containing the hormone of the adrenal cortex, and for the hormone itself, the Council decided that it would be advisable at this time to adopt a generally descriptive non-proprietary name for the more or less crude extracts and to defer until later the consideration of a name for the active isolated principle. The Council therefore adopted the title "Adrenal Cortex Extract" (with the Latin synonym "Extractum Adrenali Corticis") as its non-proprietary name for extractive preparations from the adrenal gland that contain the cortical hormone necessary for life. (Jour. A. M. A., January 12, 1935, p. 121.)

Bacteriophage Therapy.—Bacteriophage preparations have been available to the medical profession for about fifteen years. The discoveries of Twort and d'Herelle in 1915 and 1917, that bacteria can be dissolved and destroyed by an apparently self-propagating lytic principle were of great importance. Two views prevail as to the nature of the lytic principle. d'Herelle has held that it is a living parasite of bacteria, an ultramicroscopic filtrable virus, growing and multiplying in the process of changing or dissolving bacteria. Other investigators believe that the lytic principle is an inanimate substance of an enzyme-like character, which is reproduced during the course of bacterial autolysis. The difficulty in making crucial experimental tests of these hypotheses comes from the fact that the lytic principle cannot be propagated apart from the living bacteria on which it acts. The weight of opinion now seems to be preponderantly on the side of the argument that the lytic principle is inanimate. The complexity of the "bacteriophage" mixtures is one cause of the confused and contradictory publications. The usual material called bacteriophage contains (1) the lytic principle or bacteriophage, (2) products of the dissolved bacteria, (3) products of bacterial metabolism, and (4) constituents of the culture medium. In its clinical application, the possible effects of all these constituents must be taken into consideration. The action of the lytic principle on cultures on plates and in test tubes is undoubtedly far greater than its action on bacteria in the animal body. There is no evidence that lysis or killing of bacteria by bacteriophage occurs in vivo, except possibly where little exudate is present and where irrigation with large amounts of lytic filtrate can be used. As for its other possible effects on invading bacteria, the evidence is in-

complete. Almost every infectious condition from colitis to rhinitis has been treated with bacteriophage. Only in the treatment of local staphylococcic infections and perhaps in cystitis due to colon bacilli and staphylococci has even slightly convincing evidence been presented to show that therapy with lytic filtrates is effective. From these writings there emerge the possibilities that the lytic principle, functioning as an inert substance rather than a living agent, may under certain conditions in the body dissolve bacteria, induce bacterial variation and increase phagocytosis. The chief action of the lytic filtrates appear to be an immunizing action, so that bacteriophage therapy would appear to be essentially a form of vaccine therapy. [A series of articles containing an extended review on the subject appeared in The Journal A. M. A., December 8, 1934, p. 1769; December 15, 1934, p. 1847; December 22, 1934, p. 1934. The articles were written by Drs. M. D. Eaton, and S. Bayne-Jones, and published under the auspices of the Council on Pharmacy and Chemistry.] (Jour. A. M. A., December 8, 1934, p. 1780.)

Advertising Dealing with Treatment of Disease or the Nutrition of the Sick, or Recommending Any Special Type of Diet.—The Committee on Foods reports that advertising dealing with treatment of disease or the nutrition of the sick, or recommending any special type of diet should be directed exclusively to physicians and, when not a part of medical publications, should conspicuously bear the phrase "For physicians only" or its equivalent. (Jour. A. M. A., February 2, 1935, p. 398.)

Fortification of Foods Other Than Dietary Staples with Vitamin D.—The Committee on Foods reports that there is no convincing evidence from the standpoint of public health of a need for the fortification of foods with vitamin D other than such staple products as milk, cereals and bread, which form the basis of the customary diet of the public throughout the year. Examples of foods not warranting fortification with vitamin D are sausage and ice cream and such accessories as chewing gum. (Jour. A. M. A., February 16, 1935, p. 563.)

Book Announcements

The Spastic Child. A Record of Successfully Achieved Muscle Control in Little's Disease. By MARGUERITE K. FISCHEL. With an Introduction by George Gellhorn, M. D., St. Louis, Mo. St. Louis. The C. V. Mosby Company. 1934. Octavo of 97 pages. Illustrated. Cloth. Price, $1.50.

This is one of the very few medical books, written for laymen, that really is worth while.

The author's description of the symptoms and cause of the disease are excellent. Her methods of treatment, emphasizing the absolute necessity of daily personal care and supervision, are beyond reproach and strike the keynote in the basic principles of the logical treatment of these unfortunate children.

This book can be highly recommended to the parents of spastic children, both as a great mental stimulus when facing the care of one of them, and also as a remarkably clear and concise outline of the very necessary care at home.

J. BLAIR FITTS.

I Know Just the Thing for That. For Patients without Doctors and Doctors without Patience. By J. F. MONTAGUE, M. D., Medical Director, New York Intestinal Sanitarium; American Association for the Advancement of Sciences, etc. The John Day Company. New York. 1934. 12 mo. of 265-x pages. Cloth. Price, $2.00.

A book written for "patients without doctors," concerning a number of subjects of everyday occurrence. They range from laxatives to low blood pressure. Widely advertised and publicized diseases, symptoms and remedies, are discussed in a simple, common-sense manner, with the reputed admonition that the patient see a doctor rather than treat himself. J. P. BAKER.

Methods of Treatment. By LOGAN CLENDENING. M. D., Clinical Professor of Medicine, Medical Department of the University of Kansas; Attending Physician, Kansas City General Hospital, etc. With Chapters on Special Subjects by H. C. Anderson, M. D.; Ursulla Brunner, R. N.; J. B. Cowherd, M. D.; Paul Gempel, M. D.; H. P. Kuhn, M. D.; Carl O. Rickter, M. G.; F. C. Neff, M. D.; E. H. Skinner, M. D.; E. R. DeWeese, M. D., and O. R. Withers, M. D. Fifth Edition. St. Louis. The C. V. Mosby Company. 1935. Octavo of 879 pages. Illustrated. Cloth. Price, $10.00.

In the first paragraph of the preface of the fifth edition the following statement is made: "this book was planned to furnish an outline of all the methods of treatment in internal medicine."

This edition is divided into two major sections: part 1, General Therapeutics—the methods used in treatment; and part 2, Special Therapeutics—the application of therapeutics to particular diseases. In all, there are twenty-five chapters covered in 859 pages. The reviewer has been over the book carefully for he has had in his own library the fourth edition for a period of several years. During this time the book has been in constant use and has proved itself of inestimable value.

There are certain minor details which the reviewer takes exception to such as the author's enthusiasm for sodium thiosulphate in the treatment of arsenic dermatitis and sodium formaldehyde sulphoxylate in the treatment of mercury poisoning. I doubt if either one of these remedies has a justified place in the therapeutic armamentarium of poisoning by these two substances. The author also shows

considerable enthusiasm for the spirochetal origin of pulmonary abscess. I doubt if this conclusion is justified in the light of more recent bacteriological investigations.

There is no greater need in the general practice of medicine than that which exists for a book on therapeutics which is modern in viewpoint, sufficiently detailed in its recommendations, and accurate in its descriptions of various procedures. This volume is almost perfect in all of these requirements.

The chapter on "The Psychoneuroses," page 845, is a classic. The price of the book is justified by this chapter alone. It is one of the sanest discussions of the most difficult aspect of clinical medicine that the reviewer has ever had the opportunity of reading. This chapter should be read by all who are engaged in the practice of medicine including the internist, surgeon, and those practicing in special fields such as obstetrics and pediatrics. I might add, parenthetically, that it would be rather desirable if some of the psychiatrists would read the chapter on psychoneuroses. It would lessen their enthusiasm for psychoanalysis and tend them toward a more logical approach in the solution of "conflict" problems.

WM. B. PORTER.

Elementary Human Anatomy. Based on Laboratory Studies. By KATHARINE SIBLEY, Professor of Physical Education, School of Education, Syracuse University, Syracuse, New York. A. S. Barnes and Company, Incorporated. 1935. New York. Octavo of 380 pages with 213 illustrations. Cloth. Price, $4.50.

This book of 360 pages combines a textbook and laboratory guide designed especially for students of physical education. The foreword is written by Sir Wilfred Grenfell. Emphasis has naturally been laid upon skeleton, joints, and muscles, the accounts of which make up two-thirds of the book. The difficulties of presenting briefly but satisfactorily the essentials of a physiologic anatomy, so that the student's eventual knowledge is coupled with meaning and understanding and reality are admittedly great. Statements of fact must be condensed and generalized and from such the beginner is prone to gather surprising ideas. For example, the statement that the "Optic—or nerve of sight, arises from the occipital lobes of the brain and is distributed to the retina of the eyeball" will be very difficult and misleading as well. But such statements are not typical of the book.

The section on the muscles is very well done so that the mechanisms of movement are clearly presented. The illustrations are very well chosen from such standard works as Morris, Cunningham, Testut, Poirier-Charpy, Sobotta-McMurrich and Gerrish and should go far toward making the text intelligible.

The laboratory work calls for the study of the bones of human skeleton, of wet specimens of human dissections, of the human manakin, of fresh viscera from the abattoir, and especially of the movements and actions of muscles in the living human body. Some demonstration of the microscopic structure is also included for the main tissues.

H. L. OSTERUD.

Physiology In Modern Medicine. By J. J. R. MACLEOD, M. B., LL. D., D. Sc., F. R. C. P., F. R. S. Regius Professor of Physiology in the University of Aberdeen, Scotland; formerly Professor of Physiology in the University of Toronto, Canada, etc. Assisted in the Present Edition by Philip Bard.

The author, whose death recently occurred, has dropped from the title of this edition the word biochemistry and has retained in the text only those parts of biochemistry considered essential for the explanation of physiology. This is a commendable change, for the two subjects now include far too much for them to be enclosed in a single volume.

Macleod's book is a fair text of physiology, pointing out many clinical applications in an effort to impress the student that the subject is of vital importance to the practitioner of medicine. However, for so recently published a book, there are some serious omissions. The exact relationship of vitamin A and carotene is omitted, nothing is mentioned of flavines under vitamin B, and the important difference between irradiated ergosterol and natural vitamin D is not even suggested. The formula of these vitamins should likewise have been included.

Discussion of the pituitary hormones is scattered through the text and no recapitulation is made under the heading of the pituitary gland, which is unfavorable from the student's point of view. The discussion of the labyrinth in equilibrium reactions is very sketchy, nothing being said of the mechanism of stimulation of the sensory endings. In fact, the word otolith could be found but once and was not indexed.

Such omissions make the reviewer, as a teacher of physiology feel that he could not recommend this book for medical students.

ROLLAND J. MAIN, PH. D.

Virginia Medical Monthly

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Editorial

An Octocentennial.

Cultivated and religious people everywhere are this year celebrating the birthday of a Jewish physician, Moses Maimonides, the scion of a rich and distinguished family, who was born in Cordova, March 30, 1135. Caught in the dispersion of the Jews that followed in the wake of a great persecution in Spain about this time, his education interrupted, his fortune gone, Maimonides finally settled in Cairo. Here he soon became well known as a doctor, was appointed body physician to Saladin, and married the sister of Ibn al Mali, a royal secretary. With his personal fortune made, he turned all his influence to the betterment of his race to whom he became not only an incomparable healer but a great philosopher and an acknowledged religious leader. Although he died nearly eight centuries ago his memory is still green, freshened now by the worldwide celebration in his honor. To this author of a commentary on the *Mishnah* and of the *Mishneh Torah,* a master of Rabbinic literature, and one of the greatest Hebrew philosophers, Jews the world over have proudly paid tribute. To this author of the *Guide for the Perplexed,* a philosophical attempt to harmonize Biblical and Rabbinic teachings with Greek thought, especially that of Aristotle, philosophy today pays its acknowledgement.

Surely medicine also must offer her meed of praise to this profoundly versatile and gifted man. For first and foremost he was a physician. His *Tractatus de Regimen Sanitatis,* a treatise on personal hygiene, was prepared especially for the Sultan's own use. It contains an excellent regimen, diets, and the formula for a rhubarb and tamarind pill. During the Middle Ages another treatise of his on poisons was much in vogue. It was translated by Steinschneider into German as late as 1873.

Perhaps the clearest picture of Maimonides the physician is to be seen in one of his letters in which after describing the onerous duties exacted of him by the Sultan's household where he had to go every day and often remain the greater part of the day, he goes on to say, "I repair to Kahira (Cairo) early in the day, and even if nothing unusual happens I do not return to Misr (Fostat) until the afternoon. Then I am almost dying of hunger. I find the antechamber filled with people both Jews and Gentiles, nobles and common people, judges and bailiffs, friends and foes—a mixed multitude, who await the time of my return.

"I dismount from my animal, wash my hands, go forth to my patients and entreat them to bear with me while I partake of some slight refreshments, the only meal that I take in the twenty-four hours. Then I attend to my patients, write prescriptions and directions for their various ailments. Patients go in and out until night fall, and sometimes even, I solemnly assure you, until two

hours and more in the night. I converse and prescribe for them while lying down from sheer fatigue, and when night falls I am so exhausted can scarcely speak."

Let the "much driven" doctor of today hail this great Jewish physician who did not let the fact that he was court physician to Saladin interfere with the development of his own great soul by a life of service and self-sacrifice.

Just Another Fad.

One of the latest food fads among the hundreds that have been foisted upon the American public in the last few years is that sponsored by Benjamin G. Hauser. It can be found in a book called *Food, Science and Health* where the Hauser Elimination Feeding System is fully set forth. It abounds in such statements as: "There is no one living who does not accumulate a few pounds of poison each year regardless of how carefully he lives"; "Poisons have to be neutralized or they are absorbed"; "When the skin is dry or inactive because the pores are clogged with dirt, the poisons normally thrown out of the body through the skin have to be carried out by some other organ"; keep the skin clean "permitting the pores to breathe"; "Epsom salts has a pumping action and helps eliminate through the skin."

The two-day elimination scheme which is recommended once a month and is said to start you "on the right road to a year of health," consists of taking "a bit of vegetable salt water three times a day"; "Swiss Kriss at night"; "ten to twelve pieces of acid fruit a day"; "one quart of potassium broth a day, with raw salads and cooked vegetables noon and night"; "a fifteen-minute Epsom Salts bath every day." Drinking water must be distilled. On the last pages of the book one finds that the required "health foods" can be obtained from "health food stores or from the manufacturers, Modern Health Products Company, 1428 N. 24th St., Milwaukee, Wis."

A lot of printer's ink is thus wasted in telling a few plethoric, food indulgent, or overfed people to eat less and eliminate more. The whole business appears to be an elaborate and specious scheme to market two books abounding in half-baked ideas and false applications of the physiology of digestion and metabolism. Like Barnum's freaks, the scheme has found and will probably continue to find a gullible public who will not only try it but will cry its supposed virtues from the housetops.

Work for the Next Legislature.

It is apparent to any one who would take the trouble to look into the matter that much needs to be done before we in Virginia can be regarded as having modern institutions for the care of our 10,000 mental patients. Miss Dinwiddie pointed the way in her superb report which still lies tucked away in the archives of those who should, but apparently do not wish to, know how to conduct this great undertaking upon which the State spends annually more than $1,000,000. Dr. Beverley Tucker went further on the way when the other day in an address before the Virginia Conference of Social Work he advised the appointment of a special commission to study our whole system of the care of the insane in Virginia.

The matter is obviously a medical problem in which physicians will have to take the lead. The asylums must be taken out of politics and physicians must be on the board in sufficient numbers to have weight. A bill should be presented to the next legislature providing for at least one physician on each special board and making it mandatory for the Governor to make these appointments from nominations presented to him by the Medical Society of Virginia.

Progress in Radiology.

The VIRGINIA MEDICAL MONTHLY takes pleasure in publishing elsewhere in this issue the opinions of ten American roentgenologists concerning recent progress in radiology. It should assist the average doctor, who finds the ever-broadening field of medicine too wide for him to keep abreast of the advances in each specialty, to learn what they consider the three most significant achievements in their particular field during the last ten years. Considerable variation of opinion is evidenced in their expressed views, but it is perfectly clear that cholecystography, intravenous pyelography and supervoltage roentgen therapy deserve greatest consideration. As might be expected improvements in technique and apparatus are listed by some as deserving of record. The average doctor will be interested to learn that X-ray of the blood vessels and irradiation in carcinoma of the breast and uterus have been so improved as to be placed by others in the first rank of radiological advance.

Let's Have a Neuropsychiatric Association.

Some time ago the editor of *Mental Hygiene* wrote: "Mental hygiene is concerned with a broad program for human welfare. It includes within the scope of its activities the effective treatment and control of the insane and the mentally defective, at one extreme, and at the other, the prevention of mental disabilities and the enrichment of human life. It involves an interest in therapeutic procedures for those who are failing in the battle of life and an interest also in measures and methods that will forestall maladjustment. It is concerned not only with the mental health of the individual, but with social, educational, and health activities that affect the welfare of the entire population."

Dr. J. Allison Hodges, past president of the Medical Society of Virginia and a man who has given his life to neuropsychiatric practice has recently proposed the organization of a Virginia State Neuropsychiatric Association. He would set it up as a fitting memorial to the man who did most for mental hygiene in the State, Dr. William F. Drewry. Says Dr. Hodges: "I think our profession should awake to the necessity and importance of this work among our young people, and I believe that under the leadership of a young and enthusiastic man, who could surround himself with capable and influential associates, this branch of our educational work could be initiated. I can see that this work may so develop that our State Society might wish later to sponsor it, and enlarge its educational activities under the Department of Medical and Clinical Education so as to include High Schools, etc., or even having Honorary or Associate members, or members-at-large among the laity, thus utilizing and coordinating with our efforts, the Law and Ministry, and such other agencies as may or may not be deemed desirable by the Association after its organization.

"Mental hygiene has just come of age, and celebrated its twenty-fifth birthday on November 14, 1934, and it seems to me, that a public consciousness of the needs of mental health should be directed and developed under the guidance of physicians, and I believe that such a work would have been most pleasing to Dr. Drewry, especially as at this time, nothing appears likely to be done to perpetuate his initial work in this State."

It seems to the MONTHLY that such a neuropsychiatric association could do a great deal for the State, but it believes that it is extremely important to keep the organization of such a society strictly within the ranks of the medical profession. Medicine must hold the bridle rein in all matters relating to medicine. No one knows what the psychiatry of tomorrow will be, but we can be very certain that it will find its relations to medicine and biology even more intimate than they are today. It will probably know better how to measure human intelligence, how to evaluate the hereditary factor, and will possess greater respect for the interrelation of the soma, the psyche and the environment. All this new body of information can be used for the betterment of human life and such an association as Dr. Hodges proposes is the natural means not only of disseminating the knowledge but of assuring its practical application.

President's Message

To Members Medical Society of Virginia:

For your information and thoughtful consideration, I take this means of submitting to you the essential facts and certain comments upon a matter which should, and I believe will, interest every member of the Medical Society of Virginia. To give the matter a title, we might adopt the heading:

In Re: THE QUESTION OF THE RE-APPOINTMENT OF DR. JAMES K. HALL AS A MEMBER OF THE SPECIAL BOARD OF DIRECTORS OF THE CENTRAL STATE HOSPITAL AT PETERSBURG.

The gist of this matter is set forth in the exchange of letters between the Governor of Virginia and me as President of the Medical Society of Virginia. But, that every physician may understand the exact set-up of the control of our State hospitals for the insane, epileptics, and feeble-minded, it seems well to introduce this correspondence with a brief preface. Then follow a few comments. I will leave it to you to draw your own conclusions.

The "General Hospital Board"[1] is appointed by

[1]Officially, the General Board of Directors of State Hospitals and the Colony for Epileptics and Feebleminded.

the Governor. It is composed of fifteen men and women. Each of the four hospitals and the epileptic colony has three directors, its Special Board of Directors, and these five boards sitting as one body constitute the "General Board." The four State hospitals and the colony are as follows: the Eastern State Hospital at Williamsburg; the Central State Hospital (for colored people) at Petersburg; the Western State Hospital (including the DeJarnette State Sanatorium) at Staunton; the Southwestern State Hospital at Marion; and the Colony for Epileptics and Feeble-minded at Lynchburg.

Dr. James K. Hall, of Richmond, was until now a director of the Central State Hospital, exclusively for colored patients. His private sanatorium at Westbrook is for white patients only.

The law does not specify the Chairman, or executive officer of this Board. In fact, I am of the opinion that there is no State board permitted by legislation so much of its own discretion, without let or restraint, as the "State Hospital Board." At present, by election of the Board itself, the Chairman is Mr. Shirley Carter, a member of the Special Board of the Western State Hospital and the DeJarnette State Sanatorium.

The State hospitals and colony are supposed, under the law, to admit and to care only for the insane, the epileptic, the feeble-minded, the inebriate and the drug addict, or those suspected of having such diseases or conditions. If so, every one of their inmates is in some degree a *sick* individual, even if his sickness be entirely mental. This is an obvious conclusion, but one apt to be lost sight of at times. To this purpose only, i. e., the care of a certain class of the sick, is dedicated, at least in theory, these large and expensive physical plants, the army of attendants and other employees, these physicians and nurses, and annual appropriations of approximately $1,000,000.

The General Hospital Board, acting either as such or as five independent special boards, controls these several hospitals. The Governor has a degree of control over the Board, as he has the appointing power, without the necessity of nomination, or of recommendation, by any other body or person. The Board chooses the Superintendent of each hospital and the members of his staff; the Superintendent employs all employees.

Thus, a body of (until now) thirteen laymen and women, and two doctors, has control, more or less directly, of the physical well-being of about ten thousand helpless and pitiful sick people, wards of the State of Virginia.

To sketch in the immediate background of this exchange of letters: Bear in mind that the Medical Society of Virginia, through its House of Delegates, in session in the fall of 1933, condemned certain practices of the Western State Hospital, including especially the operations of the DeJarnette Sanatorium. It directed its proper committee to present this protest to the Governor, and to do all things necessary to secure the passage of corrective legislation. These orders were complied with.

In this connection, it is not generally known that the General Hospital Board itself was the first organization to acknowledge the right and the righteousness of the position of the Medical Society of Virginia in this matter. The circumstances were these: Dr. DeJarnette and others early in the session of the Legislature had secured the introduction of a bill to legalize the alleged unauthorized practices of the DeJarnette Sanatorium. This bill became known familiarly as the "DeJarnette Bill." But almost immediately the General Hospital Board, in a session attended by Dr. DeJarnette, disapproved the bill by a majority vote. Dr. DeJarnette stated that he would yield to this advice, and would withdraw the bill. We do not attempt to reconcile this avowal with his subsequent intense activity to further by all means possible the progress of the bill through the Legislature.

Technically, the Medical Society of Virginia lost its fight. Morally, it won. The proponents of that bill tacitly admitted that their former practices were unauthorized by urging the passage of an act to legalize some of the very things complained of. But to legalize a wrongful act does not make it right.

The only purpose in reviving this controversy is to ask the question whether it is not possible that all of the present situation may be but a repercussion of the unpleasantness of a year ago?

It may or may not be significant that until this legislative struggle of last year, Mr. James, Commissioner of Public Welfare, was Chairman of the General Hospital Board, though not a director of any hospital. In the midst of this controversy, he asked to be relieved of this chairmanship. Then, Mr. Shirley Carter, Director of the Special Board of the Western State Hospital and of the DeJar-

nette Sanatorium Board was elected by the Board to be its Chairman.

In October, shortly after becoming President of the Medical Society of Virginia, I learned for the first time of a vacancy on the General Hospital Board, the first that had occurred since the eventful series of happenings just recorded.

This introduces the first exchange of letters.

A VACANCY ON THE GENERAL HOSPITAL BOARD

Abingdon, Va., October 19, 1934.

GOVERNOR GEORGE C. PEERY,
GOVERNOR'S MANSION,,
RICHMOND, VA.

MY DEAR GOVERNOR:

I have been informed, I think reliably, that Mr. John Q. Rhodes, Jr., has resigned his membership upon the Special Board of Directors of the Eastern State Hospital, at Williamsburg. If it be a fact that Mr. Rhodes has resigned, the appointment of his successor must be before you now.

Perhaps you may have heard that I recently became President of the Medical Society of Virginia, but it is hardly in an official capacity that I am writing of the interest of the doctors of the State in the selection of the member of the General Hospital Board. I cannot speak officially because the Medical Society has not authorized me to do so. *I do feel, however, that there should be more doctors on this Board. For the same reason that doctors constitute a majority of the State Board of Health, I think that physicians should have at least a larger representation upon the General Hospital Board.**

Would you think it improper of me to suggest to you, therefore, that you might get some good advice in conference with physicians about this appointment? Personally, I feel that if a doctor in the Norfolk area were appointed to fill Mr. Rhodes' vacancy, the General Hospital Board, the administration of the Eastern State Hospital, and, also, citizens of the city and vicinity of Norfolk, as well as the State generally, might be benefited.

I hope sincerely that you will take this letter in the spirit in which it is meant, namely, one of helpful suggestion. And with my kind regards, I am,

Respectfully yours,
(Signed) F. H. SMITH.

COMMONWEALTH OF VIRGINIA
GOVERNOR'S OFFICE
RICHMOND

October 23, 1934.

DR. F. H. SMITH,
ABINGDON, VA.

DEAR DR. SMITH:

I am in receipt of your letter of the 19th.

It is true that John Q. Rhodes, Jr., has resigned his membership of the Special Board of Directors of the Eastern State Hospital, at Williamsburg. I have not yet appointed a successor.

There are at present *two doctors* on the hospital board. I think there should be some doctors on the board. By reason of their medical knowledge and skill, they should be especially helpful on a board of this kind, *but I do not think that the board should be composed entirely of physicians.*

I doubt the advisability of making any fixed rule as to the representation. We are anxious to have good men who will see to it that the hospitals are properly managed.

I will be glad to talk over the suggestions you make *with some of my friends among the physicians.* I am always glad to have suggestions from you.

With personal regards, I am,

Yours very truly,
(Signed) GEO. C. PEERY,
Governor.

We lost again. Evidently the Governor's "friends among the physicians" did not think as I did, or, at least, did not carry much weight, for the Governor appointed a layman to succeed Mr. Rhodes, and, in fact, a second vacancy occurring, another layman—and no doctors.

URGES REAPPOINTMENT OF DR. HALL

Now, within the year, and at the first opportunity to "get even" with Dr. Hall, if, indeed, that was the desire of those whom he may have offended a year ago, I was informed of well authenticated, though unofficial, rumors that Dr. Hall was not to be re-appointed to the Board when his term expired March 1, 1935.

This introduces the second exchange of letters.

Abingdon, Va., February 23, 1935.

GOV. GEORGE C. PEERY,
RICHMOND, VA.

MY DEAR GOVERNOR:

Perhaps you will recall that last October I took up with you the advisability of having more physicians on the General Hospital Board, controlling the State Hospitals for the Insane and Epileptics. There are just two physicians on the Board of fifteen. The specific occasion of my writing was the vacancy which had occurred through the resignation of Mr. John Q. Rhodes, Jr. In this connection I offered my advice as to the suggestion of a physician to succeed Mr. Rhodes, I asking as President of the Medical Society of Virginia.

In spite of the fact that my suggestion was not followed and my offer was not accepted in that instance, I am confidently appealing for your favorable consideration of a present matter. I am told that the term of Dr. Jas. K. Hall, a member of the Special Board of the Central State Hospital, expires shortly, and that there is some question of his re-appointment.

I hope that this is a mistake. Should Dr. Hall not be re-appointed, it would be a serious loss to the State Hospital Service.

**All italics mine.*

Because Dr. Hall had such a prominent part in the matter of the "DeJarnette Bill" when it was pending in the Assembly last year, it will be natural to think, should he not be re-appointed, that reprisal is being fixed upon him for his activity. The Medical Society of Virginia was also active in opposing the operation of the DeJarnette Sanatorium for the same reasons that Dr. Hall opposed it. Therefore, in the event that Dr. Hall is not re-appointed, the conclusion will be almost inescapable that professional criticism, however sincere, of the operation of the State Hospitals will result only in the tightening of lay control over these *medical institutions*.

I hope, therefore, that you will find it proper to reappoint Dr. Hall.

With sincere personal regards, I am,

Respectfully yours,

(Signed) F. H. SMITH,
President.

The report that Dr. Hall would not be reappointed to the General Hospital Board, or to the Board of Directors of the Central State Hospital, seems to have aroused more interest and more feeling than any other issue affecting physicians since it was last seriously proposed to put a license tax upon physicians. I am told that the Governor was deluged with letters, telegrams and personal calls all urging the re-appointment of Dr. Hall. These did not come entirely from Councilors nor the spokesmen of the component county societies. Our's was not a biased point of view, as is proved by the fact that the entire delegation of the City of Richmond in the Assembly visited the Governor to urge this appointment and the other two members of the Central Hospital's Board and several members of the General Board. Were further confirmation needed, note these quotations from editorials of the two Richmond papers:

NEWSPAPERS TAKE A HAND

THE RICHMOND NEWS LEADER

TUESDAY, FEBRUARY 26, 1935

Is It Reprisal?

. . . . . .

Many Richmond medical men affirm that the real reason for dropping Dr. Hall is that he was active in the fight against the DeJarnette Sanatorium at the Legislative session of 1934. Physicians regard the move against him as a definite reprisal, provoked directly and solely by his protest against State support of the adjunct to the Western State Hospital. . . .

. . . We cannot believe that Governor Peery will permit himself to be put in such an indefensible position.

. . . It will be a sorry return for invaluable service if reprisal is visited on Dr. Hall, because, in the exercise of his rights as a citizen, he protested to the General Assembly against the operation of the DeJarnette Sanatorium as a quasi-state institution. Is it conceivable that the exercise of that inherent right of protest is to be proclaimed to the State as a disqualification for public service? If it be so, free speech has ceased to have any meaning in Virginia. The next thing we know, some Legislator will be proscribed for speaking his mind.

Absurdity is the only word to describe the contention that Dr. Hall should not remain on the board of a state hospital for the insane because he is "in competition" with institutions of that type. Central State, as every one knows, always has been a hospital for Negroes: Dr. Hall, needless to say, has no Negro patients at Westbrook. . . . And even if Dr. Hall were operating a private hospital in direct and avowed competition to Central State, what of it? Any executive who is not on the verge of idiocy would always be glad to get the honest judgment of an able competitor on his affairs. And, still again, if it be contended that Dr. Hall, as a member of the special board of the Central, is antagonistic to some of the other gentlemen who make up the general hospital board, is it not a recommendation rather than otherwise? Does Virginia want a board of "Yes" men who will always dumbly follow the lead of some dominating state official?

. . . What man whose counsel is worth anything will care to accept appointment on a state board if it is understood that along with his commission there is sent him a gag which he must submissively put—and keep—on his mouth?

RICHMOND TIMES-DISPATCH

MARCH 2, 1935

Keep Dr. Hall.

. . . . . .

The Governor's attitude toward the distinguished Richmond psychiatrist is inexplicable. So far as this newspaper is informed, no charge has been brought against either his character or his ability. On the contrary, Dr. Hugh C. Henry, superintendent of the Central State Hospital, is anxious that he be reappointed and has so told the Governor. A majority of Richmond physicians wish him to remain in this service. The Board of the Academy of Medicine has endorsed him. That is on the professional side. On the political side, Dr. Hall has the wholehearted backing of the entire Assembly delegation from the Richmond area.

. . . . . .

It may not be fair to say that the Governor is seeking to penalize Dr. Hall for his activity in the movement to abolish the DeJarnette Sanatorium, operated in connection with the Western State Hospital, at Staunton. That, however, is certain to be one of the deductions of the public if the physician does not remain on the board. In not reappointing him, the Governor would be making himself subject to the accusation that he had practiced political reprisal at the sacrifice of the welfare of an important institution for the mentally sick.

FINAL CORRESPONDENCE

To all of this pleading, the Governor replied as follows:

COMMONWEALTH OF VIRGINIA
GOVERNOR'S OFFICE
RICHMOND

DR. F. H. SMITH, March 3, 1935.
PRES. MEDICAL SOCIETY OF VIRGINIA,
ABINGDON, VA.

DEAR DR. SMITH:

I am in receipt of your letter of the 23rd ultimo.

I note what you have to say about the medical profession being represented on the General Hospital Board. I think this is a sound policy, and that the board should have some business men and some physicians.

In regard to the reappointment of Dr. Hall, *there is no question of his ability and professional qualifications,* but this is the situation: The Legislature has given its approval to the operation of the DeJarnette Sanatorium by the State. This policy will be continued until changed by the legislature. *There is a probability that a conflict may arise as between the private sanatoria and the State sanatorium. In this event,* I think it would be better to have some physician who is entirely free from any personal interest.* The General Hospital Board determines matters of policy, elects the superintendents and makes recommendations as to their salaries. *Personal and political considerations do not enter into the matter in any way. The question is one involving a general policy.*

I hope to dispose of the matter in the near future.

Yours very truly,
(Signed) GEO. C. PEERY, *Governor.*

This communication was answered as follows:

Abingdon, Va., March 7, 1935.

GOVERNOR GEORGE C. PEERY,
RICHMOND, VA.

DEAR GOVERNOR PEERY:

I acknowledge with appreciation your letter of the 6th instant.

Please know that I have the deepest respect for your office, and, if you will permit me to say so, the most kindly regards for yourself personally. Therefore, it is most unpleasant to have to disagree with you in regard to the appropriateness of re-appointing Dr. Hall. It is only because I regard the failure to reappoint Dr. Hall as *a grace reflection,* not only upon him, *but upon the organization which I represent,* that I pursue the matter further.

I understand your letter to say that there are no charges of a personal or official character against Dr. Hall. We are highly gratified to know that your only objection is "a probability that a conflict may arise" because the Legislature has approved the operation of the DeJarnette Sanatorium, while Dr. Hall operates a private sanatorium.

This "probability," then, would be applicable in the case of Dr. King when he comes up for re-appointment, and would prevent the appointment of any psychiatrist in the State. So far as I can recall, every psychiatrist otherwise eligible for appointment on this Board is connected with a private sanatorium. The Board, then, would be deprived of the advice and counsel of all experienced psychiatrists and sanatorium administrators (except the superintendents of the several State institutions), because there might be some clash of interests.

I respectfully disagree with this line of reasoning. These psychiatrists should furnish a unique service to the State. I think it a splendid piece of good fortune that Virginia is able to avail herself of the services of men whose private experiences can be secured for and directed to the administration of similar State institutions. The very fact that there may be some competition as between the two, it seems to me, could result only in improved administration and operation of both classes of sanatoria, the private and the State. And that there are disagreements and differences of points of view between members of the Board can result only in assurance that the administration of these public institutions is all that it should be.

The Medical Society of Virginia is interested, of course, that Dr. Hall not be treated unfairly. But its larger interest is not personal. We, too, feel that there is "a general policy" to defend. It was the Society itself that protested against what we thought was unauthorized practice of the DeJarnette Sanatorium. That we were right is confirmed by the fact that Dr. DeJarnette and two members of his Special Board asked the Legislature for authority to do many of the things that we pointed out were unauthorized. Before the bill was finally passed, they saw fit to amend and omit several of the items they had originally sought. For this bit of public service we think the organization should be thanked, not condemned.

Yet following closely on the heels of that argument, and *at the first opportunity for reprisal,* it is intimated that Dr. Hall will not be re-appointed, for the reasons mentioned above.

Whether we are right or not, it is impossible for us to escape the conclusion that *Dr. Hall is to be punished for criticizing practices at the DeJarnette Sanatorium, practices which were tacitly admitted indefensible in seeking legislative enactment to make them lawful.*

The State Society is interested because if this action and this suspicion of our motive is to be the *general policy* in return for suggestions, even criticism, however sincere, in matters as closely connected with medicine as the State Hospitals for the Insane and Epileptics, we want our protest to be a matter of record.

Therefore, until we see the statement published officially that Dr. Hall will not be re-appointed, *we respectfully submit the nomination of Dr. Hall* to succeed himself upon this Board.

Believe me sincerely and cordially, as well as

Respectfully yours,
(Signed) F. H. SMITH,
President.

*I wonder whether the Governor has ever thought of this probability in connection with Dr. Woodson serving as Superintendent of a State Sanatorium and also as a State Senator?

EPISODE DISCUSSED

The above letter has never been acknowledged, and ends the correspondence to date. At no time has the Governor directly asked that the Medical Society of Virginia make other nominations. This in itself would preclude such a move either by the President or the Council of the State Society. In the other event, it would have been inconsistent, to say the least, to have nominated any one than Dr. Hall, even had we been requested to do so.

The fact is the newspapers of April 3rd were the first intimation that our plea had been ignored, that Dr. Hall had not been re-appointed. Though it may seem superfluous to say so, I take pains to say that we have no objection to Dr. Frank Pratt, the Governor's appointee to the Board of the Central State Hospital. His acceptability, however, is not the point at issue. We appreciate the appointment of Dr. O. T. Amory to the Board of the Eastern State Hospital to replace Mrs. Covington. We do not know whether or not Mrs. Covington declined re-appointment. At least, we are glad to have three physicians instead of two on this Board of fifteen. I wonder, however, whether this slight yielding on the part of the Governor to our point of last fall really means anything, inasmuch as the Governor has saved his point that his "general policy" is to get rid of all except those "entirely free from any personal interest?" Should this "policy" be adhered to, and followed by the next Governor, Dr. Jas. C. King, now a Director of the Western State Hospital and DeJarnette Sanatorium is the next to go.

Once more, we have lost our immediate objective. Whether we have lost in the larger sense remains to be seen. The issue rests, in my opinion, solely upon the reaction of the medical men of Virginia. Do you or do you not choose to meet your responsibility toward patients in our State institutions, or, for that matter, toward all public affairs in which physicians possess a dominant interest and should exercise a dominant advisory control?

Speaking frankly, the broader implication for Virginia physicians in the "Hall case" is that it brings us to face the fact that organized medicine in Virginia is today at the cross roads. If one of our number, a member of an official board, against whom no charges of a personal or professional nature can be brought, is to be penalized for expressing his opinion in opposition to others of the board, and if the Statewide protest of physicians, as well as of citizens personally disinterested, is to be ignored, we must choose between organizing ourselves into a compact unit whose advice will be heard and heeded, or retiring completely from the field of public affairs, thus permitting ourselves to be used, or abused, by any machine which has the mind to so treat us. I hereby put this question directly to the members of the Medical Society of Virginia.

While this question is pending, it is comfortable to be told that politics does not enter into the Hall matter. By inference, then, the activities of this Board and the administration of its trust are not influenced by political considerations or personal bias. Think of the possible consequences *if politics were mixed* with this humanitarian medical service to these unfortunates! Suppose the Governor, the Board, the Superintendents, their staffs, all employees *were* dominated by political considerations and expediences, animated by political rewards and reprisals, rather than consecrated to the service of distressed humanity!

Incidentally, what a flood of light the potentialities of such a set-up as I have imagined throws upon the much debated question of "State Medicine!" Suppose the State of Virginia *should* set up such a system for the service of all medicine, to all the people, sane and insane, except the rich. Suppose this system *should* be dominated by politics; the Governor at the head of State medical service, as he would have the unrestricted appointing power; a board of control, even though 20 per cent may be physicians, or none at all as the Governor willed; the board having power to "hire and to fire" any and all of the medical personnel, or, even, a member of the board itself through the Governor!

It would be an anomalous situation, indeed, to be licensed by one authority of the State to practice medicine, and to be restrained from exercising that privilege by another authority of the same State because one was not in good repute politically. The physician would live under the constant threat of being removed or replaced, should he become critical of the sort of medical service being dispensed under his own observation. Or, he might be eliminated should he operate any private business which *might* come into competition with a State enterprise. For, by then, the well-established principle of gov-

ernment, that the State should not enter into destructive competition with legitimate private enterprise, shall have been reversed. In fact, the citizen-physician must not operate a private sanatorium because he *might* compete with a State sanatorium! This must be correct in law, since a justice of the Supreme Court thought it not improper to appear before a Senate Committee in advocacy of a bill, which, if it became an act of Assembly, might at any time come before him judicially for interpretation and decision.

But the fate of Virginia physicians, even though they be two thousand of its citizens, generally in good repute, is not the supreme consideration. What of the physical welfare of two million Virginians under such a system as we have imagined!

I shall leave this question there. Possibly the General Hospital Board is demonstrating by their administration of these State hospitals how efficient medical care for all the people would be under State control. At least, the vista is too extensive to portray here. Suffice it to say that the potentialities suggested by the affair of Dr. Hall are, in my opinion, more important and far-reach in their implications than any that have confronted the thinking people of Virginia, lay and professional, since the World War.

F. H. SMITH,
President.

April 5, 1935.

Department of Clinical and Medical Education of the Medical Society of Virginia

The South Boston Postgraduate Course in Pediatrics,

Sponsored by the Department and announced in the April issue, was completed on April 3rd. In addition to the physicians previously announced in attendance upon the course should be added the names of Drs. R. H. Fuller and W. C. Brann. Visitors during the course included Drs. P. W. Miles, of Danville and H. C. Chalmers, of Phoenix. The public health nurses of Halifax County, upon the invitation of the physicians, attended six of the clinics.

The statistics for the course as a whole are as follows:

Enrolled: 12
Visitors: 4
Average attendance at meetings: 10.9
Per cent of attendance for those enrolled: 90.

Both the clinician, Dr. Samuel F. Ravenel, and the physicians attending the clinics speak most enthusiastically of achievements.

Program for Postgraduate Clinic at the University of Virginia.

Supplementing the postgraduate clinic to be held at the Medical College of Virginia, Tuesday, April 30th, as announced in the previous issue of the MONTHLY, the Department of Medicine of the University of Virginia will hold its fifteenth postgraduate clinic at the University of Virginia hospital on Friday, May 10, 1935. This program is conducted in cooperation with the Department of Clinical and Medical Education. The program follows:

FRIDAY, MAY 10, 1935

9:00- 9:30 A. M.—Registration, University of Virginia Hospital.

Morning Sessions

9:30-10:00—Diagnosis and Treatment of the Commoner Affections of the Eye. Dr. H. S. Hedges,
10:00-10:10—Discussion.
10:10-10:40—Bronchiectasis. Dr. E. C. Drash.
10:40-10:50—Discussion.
10:50-11:20—Some Aspects of Renal Infection. Dr. J. H. Neff.
11:20-11:30—Discussion.
11:30-12:00—The Early Orthopedic Treatmeent of Poliomyelitis. Dr. Robert Funsten.
12:00-12:10—Discussion.
12:10- 1:30—Lunch.

Afternoon Sessions

1:30- 3:30—Ward Rounds. (Further particulars will be announced at the time of the clinic.)
3:40- 4:30—Meningitis. Dr. W. W. Waddell.
4:30- 4:40—Discussion.
4:40 —Round Table. (Further particulars will be announced at the time of the clinic.)

The physicians of the State are cordially invited

to attend this clinic and participate in the discussions. No fee will be charged for attendance. In order to make more satisfactory arrangements, those who expect to attend are requested to so notify Dr. L. T. Royster, Chairman, University of Virginia Hospital, University, Virginia.

GEOGRE B. ZEHMER,
Executive Secretary.

Proceedings of Societies

The Northampton County Medical Society

Met April 3rd, at "The Rafters" in Eastville, Va. Visitors from Salisbury, Md., were Drs. Dick, Nock, Fisher, Williams, and Kuhlman. A visitor from the Accomac County Society was Dr. Rooker White, of Keller, Va.

Dr. Alan Lloyd, of Norfolk, spoke on the "Care and Treatment of Painful Feet."

Dr. A. B. McCreary, recently of Memphis, Tenn., and now Director of the Northampton County Health Unit, spoke of his plans and policies in his new capacity. A committee from the Society, consisting of Dr. G. Fred Floyd, Dr. G. W. Holland, Dr. J. Gates Goode, and Dr. J. R. Hamilton, was appointed to act as an advisory committee to work with Dr. McCreary.

The Southwestern Virginia Medical Society

Had a most successful meeting in Christiansburg on March 22nd, under the presidency of Dr. Beverley F. Eckles, of Galax. Three new members were elected: Dr. David H. Andrew, Wytheville, as an active member, and Drs. W. K. Vance, Jr., Bristol, Tenn., and Robert O. Glenn, Mountain City, Tenn., as associate members. It was decided to hold the next meeting in Roanoke in the early Fall. Dr. H. W. Bachman, Bristol, Va., is secretary-treasurer of this Society.

The Lunenburg Medical Society,

A component part of Postgraduate Medical Society, met at Victoria in conjunction with the Department of Clinical Education of the Medical Society of Virginia, on the afternoon of Tuesday, April 9th. The meeting was presided over by the president, Dr. H. E. Whaley, of Victoria.

At the beginning of the meeting there were two case reports, one by Dr. R. A. Moore, of Farmville, and the other by Dr. Wright Clarkson, of Petersburg.

The invited guest, Dr. W. R. Jordan, of Richmond, gave a most excellent talk on Diabetes. He covered the entire field in a practical and interesting way and his presentation was greatly appreciated and much discussed by the members.

Dr. H. B. Showalter, of Kenbridge, presented a very excellent journal review on Specific Urethritis and following this, Dr. Robert Whitehead, of Victoria, presented a journal review on Prostatic Hypertrophy. Both of these brought forth considerable discussion.

Dr. H. B. Showalter was elected delegate and Dr. Robert Whitehead alternate to represent Lunenburg County in the House of Delegates of the Medical Society of Virginia at the next meeting.

Drs. E. M. Parker, of Emporia, and Bernard Barrow, of Blackstone, were elected honorary members, and Dr. J. C. White, of Blackstone, was elected to membership.

Following the meeting a delightful dinner was served in the hotel dining room.

The Greenesville County Medical Society,

Meeting as a section of the Postgraduate Medical Society, presented a most excellent program consisting of a symposium on Pneumonia, on the evening of April 5th, at Virginia Hotel in Emporia.

The meeting was called to order by the President, Dr. C. E. Martin, with Dr. B. J. Atkinson officiating as secretary.

The first paper on the program was "Pneumonia" by Dr. J. B. Kiser. Following this, Dr. L. P. Jones gave a paper on "The Differential Diagnosis, Prognosis and Treatment of Pneumonia." The third paper on the program was "The Cause of Death in Pneumonia" by Dr. T. H. Anderson and following this Dr. Wright Clarkson showed numerous roentgenograms demonstrating various types of chest pathology.

Every physician present entered into the discussion of the symposium which lasted for nearly four

hours and which proved to be the most enthusiastic medical meeting held in Emporia in recent years.

Before the meeting the physicians attended a brunswick stew at the Greenesville County Hunt Club and after the meeting refreshments were served from the hotel dining room.

The Bedford County Medical Society

Held its regular quarterly meeting on the evening of April 15th. There was a good attendance and an unusual amount of interest. Papers were presented on the Function and Hormones of the several endocrine glands by Drs. W. O. McCabe, T. P. Weat and C. H. Bondurant. Dr. Bondurant is president and Dr. J. A. Rucker, secretary.

The next meeting will be in July.

The Lynchburg Academy of Medicine

Met in regular meeting April 1st, the subject for discussion being "Influenza." Dr. S. Grady Miller, presented a paper on "Diagnosis and Treatment," and Dr. D. P. Scott, on "Complications." The attendance was large and discussions free with all the divergence of opinion which the subject justified.

At the same meeting Dr. F. O. Plunkett and Dr. D. P. Scott, were elected delegates to the State Meeting, and Drs. E. G. Scott and John Hundley, Jr., were selected alternates. All are of Lynchburg.

Officers of this Society are Dr. W. C. Adkerson, president, and Dr. John Hundley, Jr., secretary.

The Roanoke Academy of Medicine

Held its third hospital meeting at the Shenandoah Hospital, on March 25th. The following scientific program was presented:

Bilateral Tuberculosis of Kidney—Drs. S. B. Cary and I. E. Huff.

Hydronephrosis in Child—Dr. L. G. Richards.

Dehydration—Dr. J. D. Willis.

Skin Graft—Dr. I. H. Hurt.

Nephrectomy (Motion Pictures)—Dr. T. J. Hughes.

Following this program refreshments were served.

On Monday evening, April 1st, the Academy held a dinner meeting at the Elk's Club. Dr. J. Lawson Cabaniss, of Roanoke, was elected to membership in the Academy.

The following scientific program was presented:

The Diagnosis and Treatment of Bronchiectasis—Dr. A. C. Christie, Washington, D. C.

Practical Applications in Drug Therapy and Surgical Indications Resulting from Recent Accurate Diagnostic Procedures in the Upper Urinary Tract—Dr. William P. Herbst, Washington, D. C.

Following this program, Dr. Christie discussed Hospital Insurance.

Dr. W. P. Jackson and Dr. Frank Helvestine, Jr., are president and secretary, respectively, of the Academy.

The Virginia Peninsula Academy of Medicine.

At its meeting on March 18th, at Hampton, Dr. C. C. Carpenter, of Wake Forest Medical School, spoke on "What We Know About Cancer," and Dr. Walter B. Martin, Norfolk, on "Management of the Heart Case."

This organization has about eighty-five members and has a monthly dinner meeting.

Dr. Edward L. Alexander, Newport News, is president, and Dr. F. S. Bacon, secretary.

News Notes

Our State Meeting.

Though dates for the annual meeting of the Medical Society of Virginia in Norfolk are over five months off—October 15th-17th, the local committee, under the chairmanship of Dr. W. L. Harris, is already actively at work for the success of the meeting. The Monticello Hotel has been selected as headquarters and as the place for all meetings. Dr. Harris announces that in the way of entertainment, the Norfolk County Medical Society is planning an old fashioned pre-prohibition oyster roast on Lynnhaven Bay.

The local auxiliary is also planning elaborate entertainment for the visiting ladies.

State-Wide Safety Conference.

Realizing the enormous toll we are paying for preventable accidents of all types, in the homes, schools, industry, on the streets and highways, Governor Peery has called a State-Wide Safety Conference to be held at the Jefferson Hotel, Richmond, on May 15th and 16th, to consider all phases of accident reduction. There will be a general meeting on Wednesday morning the 15th at which time there will be given a general outline of the purpose of the Conference after which the Conference will be broken up into group meetings for the remainder of the 15th and the morning of the 16th, to study and discuss the fundamentals of accident reduction as pertaining to their groups. On the evening of the 15th, there will be a banquet at the Jefferson Hotel at which time prominent speakers will address the Conference.

There are one hundred State-wide organizations sponsoring this Conference, among them being the Medical Society of Virginia and the Virginia Hospital Association.

An attendance of from 1,500 to 2,000 is expected, and members of the medical profession are especially invited.

Dr. F. P. Fletcher, president of the Richmond Academy of Medicine, will be chairman of the Public Safety Section of the Conference. This section is to have special charge of the discussion of accidents in the home which take a much larger toll than generally supposed. There were fifty-two deaths reported in Richmond from home accidents last year, caused by falls, scalds, burns, asphyxiation and poisons, as compared with thirty-six from automobile accidents, and in the whole United States the number was 35,000 from automobile accidents as compared with 33,000 from accidents in the home.

Further information may be obtained from Col. William M. Myers, managing director of the Richmond Safety Council, who is acting as secretary of the Conference.

American Medical Association.

Official call was issued recently for the eighty-sixth annual session of the Association to be held at Atlantic City, N. J., June 10th-14th, under the presidency of Dr. Walter L. Bierring, of Des Moines, Iowa. The House of Delegates will meet on Monday and the scientific assembly will open with the general meeting on Tuesday evening at 8:30 P. M. This will be a lovely season to visit Atlantic City and should be an added attraction in securing a large attendance. Those who have not selected reservations should communicate at once with Dr. W. E. Darnall, chairman, Committee on Hotels, 16 Central Pier, Atlantic City, N. J.

Dr. Frank F. Thweatt, Jr,

Class of '28, University of Virginia, School of Medicine, now P. A. Surgeon, U. S. Public Health Service, is being transferred on May 1st from Naples, Italy, to Warsaw, Poland, care the American Consulate General.

The Virginia Conference of Social Work,

At its meeting held in Richmond April 10th-13th, the division on Public Health, sponsored by the Richmond Academy of Medicine, with Dr. Fred P. Fletcher, Jr., as chairman, recommended that the section on Public Health be continued and that the Medical Society of Virginia be asked to sponsor the program.

That the indigent and the population in the lower income groups are receiving insufficient medical care was brought to the attention of the group which suggested that a Central Admitting Bureau be established in various communities throughout the State to render day and night service and act as a clearing house through which hospitals, clinics and home services could be coordinated. Here, according to the findings committee, adequate records should be kept, information made available, and the services of ambulance, city physicians, nurses and social workers be procured. One of the major functions of the bureau would be the adjustment of the health service costs to the individual income, budgeted and scaled to meet individual circumstances. Public and private health agencies, private physicians and dentists, faced with the same problem, were recommended to combine in this undertaking.

Group hospitalization was recommended as a further aid for the lower income group, as well as adequate clinical facilities, tax supported, for the ambulant, indigent sick. Such facilities should be in close alliance with the hospital and home medical services through the Central Record Office and social service workers, and all physicians serving in clinics should be paid, the committee further suggested.

A complete copy of the findings and recommendations of this commmittee is available to any one

wishing it and may be secured by notifying Miss Miriam H. Dettelbach, Council of Social Agencies, 803½ East Main Street, Richmond, Va.

Dr. N. Thos. Ennett,

Until recently of Richmond, Va., but now director of the Health Department of Pitt County, N. C., with headquarters at Greenville, has just become editor of the Public Health Department of *Southern Medicine and Surgery*, upon invitation of its editor, Dr. J. M. Northington, of Charlotte.

Married.

Dr. Edward M. Holmes, of the staff of the State Health Department, Richmond, Va., and Miss Sarah Daily Walsh, Norfolk, Va., April 27th.

Dr. James Edwin Wissler, class of '30, University of Virginia, School of Medicine, and Miss Lola C. Johnson, Winchester, Va., March 24th. They are making their home in Washington, D. C., where Dr. Wissler is now associated with Drs. Groover, Christie and Merritt in the practice of roentgenology.

American Medical Golfers to Play in Atlantic City.

The American Medical Golfing Association will hold its twenty-first annual tournament at the Northfield Country Club in Atlantic City on Monday, June 10, 1935. This is described as a most interesting golf course and has a beautiful club house. Thirty-six holes of golf will be played in competition for the seventy trophies and prizes in the nine events.

Dr. Charles Lukens, of Toledo, is president of this Association, which was organized in 1915 and now totals 1,100 members representing every state in the union.

All male Fellows of the American Medical Association are eligible and cordially invited to become members of the A. M. G. A. Write the Executive Secretary, Bill Burns, 4421 Woodward Avenue, Detroit, for an application blank. Participants in the A. M. G. A. tournament are required to furnish their home club handicap, signed by the secretary. No handicap over twenty-five is allowed, except in the Kickers' (Blind Bogey). Only active members of the A. M. G. A. may compete for prizes. No trophy is awarded a Fellow who is absent from the annual dinner.

May Day—Child Health Day.

May first will again be celebrated throughout the nation as May Day—Child Health Day. The project for this year is immunization against diphtheria of all children between the ages of six months and six years.

In the twelve years from 1920 to 1932, the deaths from diphtheria in the United States dropped from 15 for every 100,000 population to 4.5. Though there are states and cities where the disease has become very rare, there are other states and cities where the trend is in the wrong direction; where the deaths, according to the latest reliable figures, are increasing rather than decreasing. It was for this reason that the American Child Health Association has selected the stamping out of diphtheria as their special project for May Day—Child Health Day.

Further information about this program may be obtained from the American Child Health Association, 50 W. 50th St., New York.

Medical College of Virginia News.

Dr. James B. McLester, professor of medicine, University of Alabama School of Medicine, recently addressed the junior and senior classes in medicine.

President William T. Sanger and Dr. Lewis E. Jarrett, superintendent of hospitals, attended the Tri-State Hospital meeting in Greensboro, N. C., April 11th-12th. Dr. Jarrett was elected president of the Virginia Hospital Association at this meeting.

The regular scientific meeting of the faculty and staff was held on April 11th. The program was as follows:

Spinal Cord Compression—Report of a Case, by Dr. Harry Walker.

The Responsibilities of our Dietary Department, by Miss Aileen Brown.

The Treatment of Bichlorid of Mercury Poisoning—A Study of Forty-Six Cases, by Dr. William B. Porter.

The Outpatient Department report for the month of March shows 6,191 patient visits made by 2,894 individual patients. Of the total of 6,191 patient visits to the clinic 2,479 were to the medical clinics, 2,957 to the surgical clinics, 283 to the obstetrical clinics, 449 to the pediatrics clinics, and 23 to the preventive medicine clinic.

Dr. E. H. Ingersoll attended the American Association of Anatomists in St. Louis, April 18th-20th. At this meeting he gave a paper on the structure and function of the sympathetic nerve cells in the rabbit.

Dr. Harvey B. Haag, Dr. Frank L. Apperly, and Dr. A. M. Ambrose attended the sessions of the Federation of American Biological Societies, which includes the American Pharmacological Society, American Physiological Society, American Biochemistry Society, and the American Society of Experimental Pathology. The convention was held in Detroit, April 10th through the 13th.

Rare Chemicals, Incorporated, Nepera Park, New York, has established a fellowship of $1,500 in the department of pharmacology for the purpose of making quantitative and qualitative comparisons of the various purified fractions of digitalis. Eli Lilly and Company, of Indianapolis, Ind., has renewed its grant of $1,200 for further research work in arthritis. Parke, Davis & Company has made a grant of $1,500 for research work in the department of pathology.

News From University of Virginia, School of Medicine.

Dr. Milford Edwin Barnes, professor of hygiene in the Department of Preventive Medicine and Hygiene, University of Iowa, visited the Medical School on March 19th.

On April 11th, Dr. David C. Wilson spoke before the Virginia Conference of Social Work, meeting in Richmond, on Psychopathic Hospitals.

On April 12th, Dr. J. Edwin Wood was the guest speaker at the Annual Meeting of the University of Virginia Alumni Association in Charleston, W. Va.

On the occasion of the annual initiation to Alpha Omega Alpha on April 12th, Dr. Harvey B. Stone, of the Johns Hopkins University Medical School, gave the William Webster Root Memorial address, speaking on the subject of Transplantation of Endocrine Gland Tissue in Mammals.

News Notes From the Duke University School of Medicine and Duke Hospital.

On March 18th, Dr. E. P. Alyea, Associate Professor of Surgery in charge of Urology, gave a talk on "Renal Tumors in Children" before the North Carolina Urological Association in Pinehurst, N. C., and on April 2nd he addressed the staff of Sternberger Children's Hospital, Greensboro, N. C.

On March 20th, Dr. E. P. McCutcheon, Instructor in Dentistry, gave a paper, with exhibits, on "Fractures of the Maxilla and Mandible," before the Tri-State Dental Association in Washington, D. C.

On March 28th, Dr. Alan M. Chesney, Dean of the Johns Hopkins University School of Medicine, lectured to the students and staff on "Experimental Syphilis."

On March 30th, Dr. Hugh H. Trout, Director and Surgeon in Chief of The Jefferson Hospital, Roanoke, Va., addressed the students and staff on the subject of his recent visit to the surgical clinics at Cincinnati, Chicago, Rochester, Ann Arbor, Cleveland and Detroit.

On April 1st and 2nd, Miss Elizabeth C. Burgess, Associate Professor of Nursing Education of the Teachers College, Columbia University, visited the Duke Hospital and School of Nursing.

On April 6th, the second meeting of the North Carolina State Dietetic Association was held at Duke Hospital, which was featured by an address on Diet and Health, by Dr. W. J. Dann, of the medical school faculty.

On April 12th, Mr. Vernon Altvater, Superintendent of Duke Hospital, gave a paper entitled, "Do We Need a Central Purchasing Bureau?", at a joint meeting of the North Carolina, South Carolina and Virginia Hospital Associations.

On April 13th, Dr. Foster Kennedy, Professor of Neurology at Cornell University School of Medicine, gave the second annual lecture, under the auspices of the Beta Rho Chapter of Nu Sigma Nu, his subject being "The Relation of Neurology and Psychiatry to General Medicine."

Dr. Deryl Hart, Professor of Surgery, has just returned from attending the meetings in Baltimore of the Surgical Society of Southern Surgeons.

Dr. C. E. Gardner, Jr., Assistant Professor of Surgery, has just returned from a three weeks' visit to clinics in Cincinnati, Chicago and Rochester, Minn.

Dr. C. L. Haywood has just been appointed Surgeon in Chief to the Hugh Chatham Memorial Hospital, at Elkin, N. C.

During the month of April a new physiotherapy department is being opened at the hospital, with complete equipment for hydrotherapy and a small swimming pool for under water exercises.

New X-ray therapy equipment is being installed, in which there is a 400,000 constant potential volt machine. This machine, with two 200,000 volt machines, will make the therapy department the largest in the South.

Jefferson Medical College.

The William Potter Memorial Lecture was delivered by C. E. A. Winslow, Dr. P. H., Professor of Public Health, Yale School of Medicine, on March 29, 1935. His subject was "A Physician of Two Centuries Ago: Richard Mead and His Contributions to Epidemiology."

Dr. C. T. Wilfong,

Who has been connected with the work of the Veterans Administration in Richmond, Va., for some time, has been transferred to the Veterans Administration Facility, Roanoke, Va.

Group Hospitalization Plan for Richmond.

After a study of nearly two years, the Richmond Academy of Medicine has announced its decision to sponsor and develop group hospitalization in Richmond, Va. At first it was thought that this plan of service would have to operate under the State insurance laws, requiring not only a large bond but also a large reserve of cash collateral, which would make the plan prohibitive. In view of the demand for this service, the Academy's Committee finally proposed a plan which was submitted to the State Corporation Commission. After inquiry into the proposed plan, the Commission has indicated that if the details of the contract now being worked out by hospital executives proves satisfactory, an authorization to proceed could be granted under the securities law. The fact that the plan will be permitted to operate under the securties law means no relaxation of the State's watchful supervision, and this fact is welcomed by the Academy of Medicine which wishes to surround the plan with every possible safeguard for the individual as well as the hospitals interested.

The group hospitalization plan is already in successful operation in about fifty American cities and it is believed it will shortly be adopted by most of the hospitals in this community.

Dr. J. O. Fitzgerald,

Richmond, Va., was among those attending the Eastern Section of the American Congress of Physical Therapy at its meeting in Baltimore, Md., March 29th and 30th.

West Virginia Alumni, M. C. V.

Dr. W. T. Sanger, President of the Medical College of Virginia, and Dr. Lewis E. Jarrett, secretary of the Alumni Association, recently attended a meeting of the West Virginia Alumni Association in Charleston, and spoke of the College and its plans for the future. There were about fifty members present at this dinner meeting. Dr. John E. Cannady, class of '01, and Dr. R. O. Halloran, '31, both of Charleston, were elected president and secretary-treasurer, respectively, of this chapter.

New Appointments on Boards of State Hospitals.

Governor Peery announced the following appointments, the first of April, on the boards of directors of the various State hospitals: Dr. Frank C. Pratt, of Fredericksburg, to succeed Dr. James K. Hall on the Central State Board; Dr. O. T. Amory, of Newport News, to succeed Mrs. T. S. D. Covington on the Eastern State; Mr. J. P. Carico, of Galax, was re-appointed to the board of the Southwestern Virginia, and Mr. Shirley Carter, of Winchester, to that of the Western State.

The Virginia Graduate Nurses' Association

Is to hold its annual meeting in Charlottesville on May 16th, 17th and 18th, and a large attendance is expected. Miss Frances Helen Ziegler, dean of nursing of the Hospital Division, Medical College of Virginia, is president, and Mrs. R. S. Faris, also of Richmond, is executive secretary.

The Metropolitan Life Insurance Company,

New York City, announced two revised and one new publication which may be of interest to doctors. The first pamphlet is on Tuberculosis and has been prepared with the cooperation and advice of the National Tuberculosis Association. The second is on Diabetes and indicates the signs and causes of diabetes, etc. Man's Fight Against Disease is the title of the third pamphlet. This includes reproductions of posters used in an exhibit in the Smithsonian Institution and they portray the progress of public health from the early days to the present time.

The Company will be glad to send limited quantities of the first two pamphlets to responsible organizations for use in their health education programs, but the supply of the third pamphlet is very limited and very few additional copies can be furnished.

Air-Conditioning System in Local Hospital.

St. Elizabeth's Hospital, Richmond, Va., has installed a complete air-conditioning system in the operating rooms and all of the front bedrooms of the hospital. This not only cools the air in summer and heats it in winter, but all of the air that enters these rooms is filtered and the humidity regulated both winter and summer.

To Represent State Society.

Dr. C. C. Coleman, Richmond, Va., has been appointed by Dr. F. H. Smith, President of the Medical Society of Virginia, to represent this organization at the First Annual Virginia Statewide Safety Conference, to be held at the Jefferson Hotel, Richmond, on May 15th and 16th.

Dr. A. M. McLaughlin,

Of the class of '32, Medical College of Virginia, who has recently been with the Dupont Rayon Company, has located in Waynesboro, Va., where he is associated with Dr. J. F. Hubbard in general practice.

Dr. F. P. Fletcher,

Richmond, Va., has just been re-elected president of the East End Business Men's Association of this city, an organization interested in the civic affairs of that section of the city.

Dr. W. P. Hoy,

Petersburg, Va., has been elected a member of the board of directors of the Petersburg Rotary Club for the new fiscal year beginning July 1st.

American Association for the Study of Goiter.

The annual meeting of this Association will be held in Salt Lake City, Utah, June 24-26, 1935. A tentative program has been prepared and includes many prominent speakers from the United States and Canada.

Additional information may be obtained from the Corresponding Secretary, Dr. W. Blair Mosser, Kane, Pa.

Dr. Allen Graham, Cleveland, Ohio, is president, and Dr. J. R. Yung, Terre Haute, Ind., president-elect of this Association.

The Virginia Society of Oto-Laryngology and Ophthalmology

Will hold its annual meting, May 4th, at the Stratford Hotel, Fredericksburg, under the presidency of Dr. B. R. Kennon, Norfolk. Dr. G. G. Hankins, Newport News, is secretary-treasurer.

Dr. N. E. Tylar,

Who has recently been assistant to Dr. D. Lane Elder in Hopewell, Va., has been assigned to a CCC camp near Williamsport, Pa., with the rank of first lieutenant.

Dr. Q. H. Barney,

Who was located for some time at Mount Sidney, Va., has moved to Altavista, Va., where he is now engaged in general practice.

The American Neisserian Medical Society

Will hold its first annual meeting at the Claridge Hotel, Atlantic City, N. J., June 11th, under the presidency of Dr. J. D. Barney, of Boston. An interesting program has been prepared and all who are interested in this work are cordially invited to attend.

Dr. Oscar F. Cox, Jr., 475 Commonwealth Avenue, Boston, Mass., is secretary of the Society.

Radio Broadcasts.

The Richmond Academy of Medicine has for some months sponsored radio broadcasts over two Richmond broadcasting stations — WRVA and WMBG, the stations kindly contributing the time. Subjects which should be of interest to the layman are selected for the broadcasts which are made in the name of the Richmond Academy of Medicine, the identity of the speakers not being announced. There are two broadcasts a month, one over each station. The following is the program for May:

May 8th—WMBG—8:30-8:45 P. M.—Typhoid Fever.

May 29th—WRVA—7:20-7:30 P. M.—Poison Ivy.

The Virginia Hospital Association

Held its annual meeting the middle of April, in connection with that of the Tri-State Hospital Association of the Carolinas and Virginia in Greensboro, N. C. There was a good attendance and the sessions were most interesting. The following were elected officers of the Virginia group for the coming year: President, Dr. Lewis E. Jarrett, head of the Hospital Division, Medical College of Virginia, Richmond; vice-presidents, W. N. Walters, business manager of Lewis-Gale Hospital, and C. B. Short, business manager of Jefferson Hospital, both of Roanoke; and secretary, M. Haskins Coleman, director of Johnston-Willis Hospital, Richmond.

Doctor has Unpleasant Experience.

Dr. Guy Fisher, prominent specialist of Staunton, Va., had the most unfortunate experience on the 15th of April, of being held up in his apartment, chloroformed and robbed. He is none the worse for wear now, except for the loss of a good sum of money which he had on his person at the time.

The American Proctologic Society

Is to hold its annual meeting in Atlantic Ctiy, N. J., June 10th and 11th, under the presidency of Dr. L. A. Buie, of Rochester, Minn. Headquarters will be at the Marlborough-Blenheim. An excellent program and several social features have been arranged. Special entertainment is also being arranged for the ladies. There is a fee of $5.00 for each registrant, whether member, guest, or member of family.

For additional information, address the Secretary, Dr. Frank G. Runyeon, 1361 Perkiomen Avenue, Reading, Pa.

Annual Report of St. Elizabeth's Hospital.

The 1934 report of St. Elizabeth's Hospital, Richmond, Va., states that the total number of patients was 1,146. Approximately 76 per cent of these were surgical, 10 per cent medical and the remaining 14 per cent urological. There was a total of thirty-four deaths. Of these deaths twenty-one (2.52 per cent) were among the operative surgical patients, one (2 per cent) among the surgical non-operative, seven (6.25 per cent) among the medical cases and five (3.26 per cent) among the urological. The mortality rate for all deaths was 2.96 per cent as compared with 2.93 per cent in 1933.

This report shows a decided increase in the proportion of the number of major operations as well as an increase in the more severe types of cases. The outpatient department reports 2,652 visits which include dressings, examinations and treatments during 1934, as compared with 2,113 in 1933; 206 basal metabolism tests, 150 electro-cardiograms, 618 microscopic tissue examinations and 13,757 laboratory examinations.

Seventeen articles contributed by members of the Staff were published in twelve different Journals. Two books were written—"Synopsis of Genitourinary Diseases" by Dr. A. I. Dodson, published by The C. V. Mosby Co., St. Louis, containing 275 pages and 111 illustrations by Miss Helen Lorraine; "Benign and Cancerous Gastric Disturbances" by Dr. J. Shelton Horsley, published by The University Extension Division, University of Kansas.

Appended to the report and constituting an interesting feature of it is a synopsis of all deaths, including remarks on the case, types of treatment and report of necropsies. Twenty-eight (82.35 per cent of all deaths) had necropsies performed.

Part of Eastern State Hospital to be Moved.

It is announced that a 200-patient unit of the Eastern State Hospital will be moved from Williamsburg, Va., to the Dunbar Farm outside of the town so that the Rockefeller interests can build a modern hotel near the present hospital. It is proposed to build a completely self-sufficient plant on the Dunbar Farm property, including a heating plant, kitchens and staff quarters.

Dr. William A. Harris,

Fredericksburg, Va., has announced himself as a candidate for the Democratic nomination for the Virginia House of Delegates.

Dr. Julian L. Rawls,

Norfolk, Va., was recently elected President of the Norfolk-Portsmouth Chapter of the Richmond College Alumni Association.

Fraternity Honors Physicians.

Dr. Hugh S. Cumming, surgeon general of the U. S. P. H. S., Dr. William H. Wilmer, Washington, D. C., and Dr. J. C. Flippin, University, were among those recently elected to membership in the University, Va., Chapter of Sigma Xi, national honorary scientific society. Howard H. Curd, Welch, W. Va., a medical student, was also elected from the student body.

The Academy of Physical Medicine

Will hold its annual meeting at the Claridge Hotel, Atlantic City, N. J., June 12th and 13th. For further information, address Arthur H. Ring, M. D., Secretary-Treasurer, Arlington, Mass.

The American Public Health Association

Will hold its annual meeting in Milwaukee, Wis., October 7-10, 1935. This organization is a society of 4,500 professional public health workers whose annual sessions review developments in health protection and promotion and outline plans and policies for future advances.

Several related organizations will meet simultaneously with this Association at Milwaukee.

A Health Exhibit featuring commercial, scientific and educational displays is a feature of these meetings and will be conducted as usual this year.

The Chairman of the Local Committee on Arrangements is Dr. John P. Koehler, Health Officer of Milwaukee. The American Public Health Association at 50 West 50th Street, New York City, will be glad to send program outlines on request.

Wanted—

Male resident physician for nervous and mental sanatorium; recent graduate with at least one year's completed internship; preferably unmarried. Write "451," care this journal, 1200 East Clay Street, Richmond, Va. (*Adv.*)

Obituary Record

Dr. James Hunt Royster,

Widely known neuro-psychiatrist of Richmond, Va., died March 22nd, following a heart attack. He was a native of North Carolina and was forty-two years of age. Dr. Royster studied medicine at the Medical College of Virginia but received his degree from the Jefferson Medical College of Philadelphia in 1917. At the time of his death he was an associate chief of the staff of Westbrook Sanatorium. He was in active naval service during the World War, being a Lieutenant, senior grade. Dr. Royster was a member of the Medical Society of Virginia and a number of other professional organizations. He is survived by his wife, neé Miss Louise Moss, formerly superintendent of Westbrook Sanatorium.

Dr. Ernest Christian Fisher,

Richmond, Va., died April 15th. He was sixty years of age and a graduate of the former University College of Medicine, Richmond, in 1900. Dr. Fisher was until a short time before his death assistant medical director of the Life Insurance Company of Virginia. He had been a member of the Medical Society of Virginia for thirty-one years. His wife and a son survive him.

Dr. Fielding Hudson Garrison,

Baltimore, Md., internationally known as a medical librarian and historian, died on April 18th at Johns Hopkins Hospital, having failed to rally from an abdominal operation. He was sixty-four years of age and a graduate in medicine from Georgetown University of Washington in 1893. Dr. Garrison was for over thirty years assistant librarian in the Surgeon General's Office at Washington and was for nearly twenty-five years editor of the *Index Medicus*. Later, for a short time he was associate editor of the *Quarterly Cumulative Index Medicus*. At the time of his death he was librarian at the Welch Medical Library, Baltimore, which position he had held since 1930.

Dr. Lee Jones,

Blount Springs, Ala., died January 11th of heart disease. He was fifty-three years of age and a graduate of the University of Virginia, Department of Medicine, in 1909.

Dr. Thel Hooks,

Smithfield, N. C., died February 18th of cerebral hemorrhage, at the age of fifty-eight. He was a graduate of the Medical College of Virginia in 1901.

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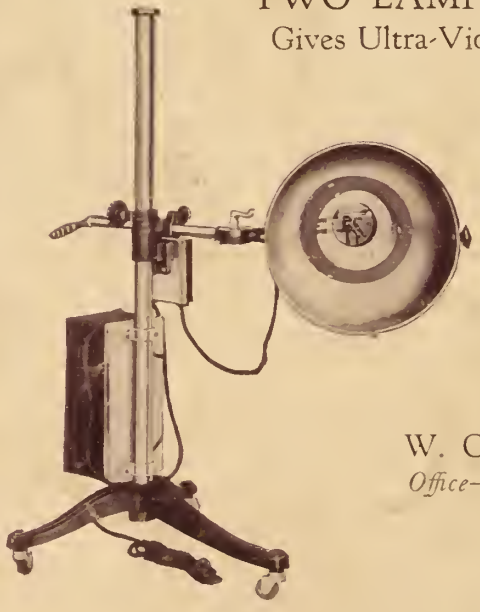

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INTRODUCTION

Prior to the isolation of the active principle of the parathyroid glands,[1, 2] our knowledge concerning their physiological function was meagre. The many studies‡ since the advent of physiologically active extracts have not only increased our knowledge of parathyroid gland physiology but also our understanding of calcium and phosphorus metabolism in health and disease. In consequence, one can no longer consider the bony skeleton as representing a stable structure from the point of view of metabolism. The bony skeleton represents an active metabolic structure, influenced by many factors, the effects of which are readily demonstrated by histologic or metabolic changes.

NORMAL CALCIUM AND PHOSPHORUS METABOLISM

The chief function of the parathyroid glands is the regulation of calcium and phosphorus metabolism. Therefore, an understanding of the basic concepts of normal calcium and phosphorus metabolism is a prerequisite to any discussion of the parathyroid glands.

The bones, composed chiefly of a complex calcium salt, containing calcium phosphate and carbonate ions, are the only storehouse of calcium and phosphorus in the body. As a system, they are perhaps best represented by the simple schematic drawing shown in Figure I. Here the bones are pre-

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‡The author has not attempted to compile an inclusive bibliography of the vast literature pertaining to either calcium and phosphorus metabolism or the parathyroid glands in health and disease. In consequence, many important references are not included.

sented by a bucket. The walls of the bucket represent the bone cortex, the sediment at the bottom of the bucket, the bone trabeculae. The bucket is filled with blood containing many other substances than calcium and inorganic phosphorus. However, the calcium and phosphorus are all that need concern us in this discussion. In normal individuals the concentration of these substances is extraordinarily constant. The serum calcium varies from 9.5 to

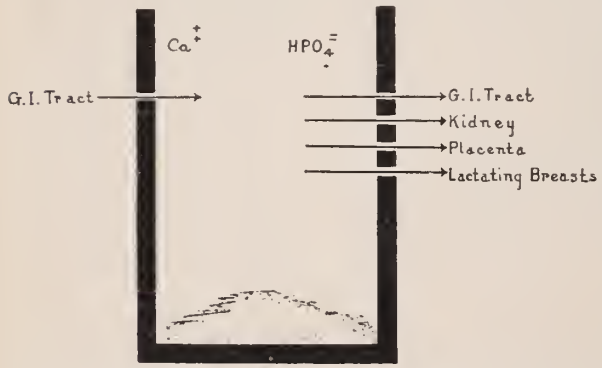

Fig. I.—A schematic drawing in which a bucket represents the bones as a system. The bucket is filled with blood and normally contains 9.5 to 11 mgm. of calcium and 3.5 to 4.5 mgm. of phosphorus per 100 c.c. The walls of the bucket represent the bone cortex, the sediment at the bottom, the bony trabeculae. The state of equilibrium existing in this system in respect to calcium and phosphorus is dependent upon the amount entering it via the gastro-intestinal tract and the amount excreted via the gastro-intestinal tract and kidneys. If entrance into the system exceeds the loss, a positive calcium and phosphorus balance exists, whereas, if the reverse is true, a negative calcium and phosphorus balance ensues. The loss from the system is further accentuated during the state of pregnancy or lactation. In such instances the placenta and lactating breasts serve as additional avenues of exit.

11 mgm. per 100 c.c. and the serum inorganic phosphorus from 3.5 to 4.5 mgm. per 100 c.c. The maintenance of this relative state of constancy of serum calcium and inorganic phosphorus is ample evidence that the bones are labile structures. Thus, in times of need, calcium and phosphorus are absorbed from the bones, and in times of excess deposited in bones. Certain experiments[3, 4] suggest that the bone trabeculae (sediment at the bottom of the bucket) serve as the most readily available storehouse of calcium and phosphorus and that the cortical bone (walls of the bucket) is at first spared in the process of mobilization. Thus, it would appear that in the adult, in times of need, calcium and phosphorus are first absorbed from the trabeculae and in times of excess are again deposited in the trabeculae. Such metabolic activity is readily demonstrated on histological examination of bones. Here, these two processes, bone absorption and bone deposition, are evidenced by increased cellular activity. Increased bone absorption is demonstrable by an increased number of osteoclasts and narrowing and reduction in number of trabeculae, whereas, with increased bone deposition, one observes an increase in the number and size of osteoblastic cells and an increased amount of osteoid tissue. Thus, from the degree and type of cellular activity observed in the skeletal system, one can estimate what metabolic changes are taking place. In normal bone, the absorption and the deposition of calcium and phosphorus go on continuously; consequently, there is always evidence of minimal osteoclastic and osteoblastic activity. Naturally, such cellular activity is more marked in the growing child. Whether the resorption and deposition of calcium and phosphorus are dependent solely upon the concentration of calcium and phosphorus in the blood cannot be answered with absolute certainty, although considerable evidence has been brought forth in favor of such a theory.[5] Adherents of this theory reason that under-saturation of calcium and phosphorus in the blood, as occurs in calcium and phosphorus deficiency diseases, calls for a liberation of calcium and phosphorus from the bones in an attempt to maintain a state of constancy in the blood.

On the other hand, in times of excess, the blood serum is to be regarded as a super-saturated solution of calcium and phosphorus. Under such conditions, the blood readily gives up its surplus and thereby enables deposition to take place. This state of super-saturation and consequent deposition of calcium and phosphorus is brought about in any portion of ossifying bone as a result of an enzyme called phosphatase.[6] This enzyme is secreted by osteoblasts and hypertrophic cartilage cells as well as by body tissues. This enzyme, phosphatase, is capable of hydrolyzing the phosphoric esters of the blood, such as glycerophosphate and hexosephosphate. In any ossifying area, the increased secretion of phosphatase allows for an increased hydrolysis of the complex phosphate compounds and in consequence a local increase in the concentration of the phosphate ions. This local increase results in a super-saturation of the blood with calcium and phosphate ions, the solubility product of tertiary calcium phosphate is exceeded, and, in consequence, deposition of this salt in the area of ossification takes place. The normal value for serum phosphatase is 2 to 4 units per 100 c.c. As one might expect, this value is higher in growing children or

any skeletal disease in which increased osteoblastic activity occurs.

One must next consider the many factors which influence the entrance and exit of calcium and phosphorus from this system because its state of equilibrium is dependent upon the balance between the intake and output of these two ions. If the intake exceeds the output, then calcium and phosphorus are retained and a positive balance ensues, whereas, if the reverse is true, a negative balance results.

Entrance into the system is dependent upon absorption of these elements from the gastro-intestinal tract and the amounts absorbed are in turn dependent upon:

1. The composition of the diet.[7]
2. The acidity of the gastro-intestinal tract.[8, 9]
3. The intestinal rate.[10]
4. Fat digestion and absorption.[10, 11]
5. Vitamin D.[12, 13]

Of these various factors, the diet and vitamin D are probably the most important. The daily calcium requirement for an adult is between 0.4 and 1.0 gm. Probably 0.5 gm. is adequate for the average individual. Equally as important as the calcium and phosphorus content of the diet is the proportion of the one to the other, the normal ratio of calcium to phosphorus being 2 to 1. For instance, if phosphorus is greatly in excess of calcium, the calcium may be precipitated in the bowel in the form of the relatively insoluble salt, tertiary calcium phosphate, and, in consequence, not be absorbed. Absorption of the remaining phosphorus is of no avail to the system because there is no corresponding amount of calcium available for deposition. In consequence, the phosphorus is excreted. Under such conditions, the result would be the same as if the diet had been inadequate in respect to both calcium and phosphorus. It is conceivable that the same state of affaris might exist if the calcium was greatly in excess of the phosphorus. Excess of certain mineral constituents may likewise be detrimental. An acid diet may favor calcium and phosphorus remaining in solution and thereby facilitate absorption. However, of all these factors, the calcium and phosphorus content and the ratio of calcium to phosphorus contained in the diet are the most important.

The acidity of the gastro-intestinal tract must influence the ionization of the calcium compounds present in the food and thereby increase their absorption. Unfortunately, there exists relatively little data enabling one to make a comparison of calcium and phosphorus absorption in individuals with and without achlorhydria.[9]

Any condition resulting in an increased intestinal rate would not allow adequate time for complete absorption of the ingested calcium and phosphorus. Therefore, we find evidence from time to time of calcium and phosphorus deficiency in diseases with associated chronic diarrhea, such as sprue, ulcerative colitis, etc. Bowel wall changes in such diseases may also be a factor preventing adequate absorption of these elements.

Failure to absorb fat, whether due to incomplete digestion or simply interference with absorption, results in deficient calcium absorption. Deficient absorption in such instances is due in part to the formation of relatively insoluble, non-absorbable calcium soaps. However, the chief factor is the failure to absorb the fat-soluble vitamin D, which is probably excreted with the excess fat. In such instances, there is an adequate absorption of phosphorus, but as this is not accompanied by calcium, it cannot be used for bone deposition and therefore is excreted in the urine. Such alterations in calcium and phosphorus metabolism eventually result in calcium and phosphorus deficiency disease. In the clinic, this type of disorder is seen in patients with chronic idiopathic steatorrhea or Gee's disease. It is probably due to a decreased or altered external pancreatic secretion as evidence by either low or absent lipolytic activity in the duodenal juice.[9]

Recent work with vitamin D[9, 12, 13] has shown that this substance influences calcium and phosphorus metabolism by increasing the absorption of calcium and phosphorus from the intestinal tract. Its chief role is that of regulating the normal functioning of the mucous membrane of the small intestine.

If one of the above-mentioned factors is at fault for an indefinite period of time, then absorption of calcium and phosphorus from the gastro-intestinal tract is interfered with, and, in consequence, entrance of these elements into the system does not take place. Thus, the equilibrium of the system is upset and there results a negative calcium and phosphorus balance. Long duration of this type of calcium and phosphorus metabolism disturbance is responsible for the calcium and phosphorus

deficiency diseases, rickets and osteomalacia. In either condition, the infantile type of tetany may develop. The blood chemistry reveals a reduction of either the serum calcium or the inorganic phosphorus. In the severe types, both are reduced. The serum phosphatase is increased, indicating increased osteoblastic activity in this type of calcium and phosphorus disorder.

As can be seen from the diagram, there are four possible avenues of exit from this system. Under normal conditions, we need only to consider the loss which occurs via the gastro-intestinal tract or the kidneys. On a normal diet, the fecal calcium consists of both the unabsorbed dietary surplus and that which has been re-excreted into the bowel.[14] The urinary excretion of calcium varies from 0.1 gm. per day on a low calcium diet to 0.5 gm. on an adequate diet. Increased excretions by these avenues of exit occur in atrophy of disuse and in some cases of osteitis deformans. Such increases are, however, slight as compared to the increases observed in acidosis, hyperthyroidism and hyperparathyroidism. If the increased excretions exceed the intake, we have a resulting negative calcium and phosphorus balance. Such a state of affairs lasting for a long period of time will result in marked generalized decalcification.

Acidosis,[15, 16] whether due to disease or induced by the administration of large amounts of acids or acid salts, results in the excretion of large amounts of calcium and phosphorus. This increased excretion is solely via the urine and occurs whether the diet is adequate or inadequate in respect to calcium. Such increased excretions are not associated with increases in the serum calcium or phosphorus; in fact, if the subject has been on a low calcium diet for a long time, the administration of large amounts of ammonium chloride may cause a fall in both the serum calcium and inorganic phosphorus.[15]

Increased excretion of calcium and phosphorus far in excess of that resulting from acidosis or excess parathyroid extract has been observed in severe hyperthyroidism.[17] In such instances, the increased excretion is via the gastro-intestinal tract as well as the kidneys. Such increased excretions are observed in all types of hyperthyroidism as well as normal individuals receiving thyroid extract. With the institution of appropriate treatment for the hyperthyroidism, the excretions return toward normal as the patient improves. With controlled roentgenograms, one can demonstrate marked generalized decalcification in many patients with exophthalmic goitre.[17] This generalized decalcification is evidently due to osteoclastic lacunar absorption. Therefore, attention should be paid to the diet in this disease. The reverse situation is demonstrable in myxedema,[17] the average calcium and phosphorus excretion being 40 per cent below normal. Administration of thyroid to such patients results in an increase of both the metabolism and the excretion of calcium and phosphorus. Such studies would seem to indicate that thyroxin has a direct effect on bone katabolism. In neither hyperthyroidism nor myxedema is the serum calcium or serum phosphorus altered. Such findings demonstrate quite clearly that the height of the stream is no indication of its direction of flow into or out of the bones.

That the parathyroid hormone causes an increased excretion of calcium and phosphorus and, in consequence, generalized decalcification has been demonstrated by many observers.[18, 19] However, the exact mode of action is still the subject of some dispute. The dispute concerns whether the increased cellular activity of bone is a primary or a secondary effect. Collip and co-workers,[20, 21, 22] working with rats, consider the appearance of large numbers of osteoclasts as the first reaction, and therefore suggest that the hormone acts directly on the bone cells, stimulating them to release calcium and phosphorus. Albright *et al*,[18, 23] from observations made on humans, interpret the bone changes and resulting increased calcium and phosphorus excretion as secondary to the primary effect on phosphorus excretion. Thus, when parathormone is administered, the first metabolic changes are a rise in the urinary phosphorus excretion and a fall in the serum inorganic phosphorus. When parathormone is discontinued, the converse is true. This implies that the extra phosphorus is drawn from the body fluids. In such instances the changes in the rate of calcium excretion and in the height of the serum calcium are more sluggish and lag behind the phosphorus changes.

Because of this drop in the serum inorganic phosphorus, the equilibrium in our system is disturbed. In an attempt to maintain its normal state of constancy, the bones try to release phosphorus, but in doing so must also release the calcium deposited with it. In consequence, the serum calcium

rises, the urinary calcium excretion is increased, and the low phosphorus and increased phosphorus excretion continue. At this point, one observes evidence of increased cellular activity in the bone.

With large doses of parathormone, Collip[2, 24] produced a state of hypercalcemia in dogs (20+ mgm. per 100 c.c.). Once the serum calcium rises above 15 mgm. per cent, the inorganic phosphorus of the serum rises abruptly and continuously until death ensues. When this stage is reached, there is evidence of failing kidney function as shown by the rising non-protein nitrogen and urea as well as suppression of urinary secretion. With this grade of hypercalcemia, associated metastatic calcification of the kidneys, heart, lungs and stomach readily occurs. Such complications may occasionally occur in the clinic in cases of long-standing hyperparathyroidism.

The discovery by Parhon and Urechie,[25] MacCallum and Voegtlin,[26] that tetanic seizures and a drop in serum calcium followed the ablation of the parathyroid glands first served to link these glands with calcium metabolism. However, this knowledge concerning parathyroid deficiency and its association with calcium metabolism in no way enlightened us concerning the possible existence of the clinical state, hyperparathyroidism. Not until the isolation of the active principle of the parathyroid glands by Hanson[1] and Collip[2] was the state of hyperfunction of the parathyroid glands looked for in the clinic. Since then it has been established that this disease syndrome is not a rarity.

Today, clinical cases typifying both hypoparathyroidism and hyperparathyroidism are not infrequently encountered. These two states of altered parathyroid function are perhaps best grouped as follows:

1. Hypoparthyroidism:
   a. Due to operative removal.
   b. Cause unknown, the idiopathic type.
2. Hyperparathyroidism:
   a. Due to focal hyperplasia (ademona or neoplasia) of one or more parathyroid glands.
   b. Due to generalized enlargement and hyperplasia of all parathyroid glands.

HYPOPARATHYROIDISM

Etilogy.—Hypoparathyroidism following operations on the thyroid was recognized as early as 1881 by Weiss.[27] Thus, the post-operative type of hypoparathyroidism, though rare today because of the improved surgical technique employed in thyroid surgery, is still encountered. It is due either to injury or resection of the parathyroid glands. The fact that it is often a mild disease of short duration allows one to conclude that in many instances a marked suppression of function must result from minor trauma or interference with the blood supply. Parathyroid deficiency due to diseases such as deep inflammation of the neck tissues, hemorrhages, tuberculosis, etc., is evidently rare. Spontaneous or idiopathic hypoparathyroidism, a condition analogous to myxedema,[23, 28] is rare, yet in the past ten years, we have seen five such cases in this clinic.

Symptomatology.—Irrespective of the cause of the state of hypoparathyroidism, the symptoms, signs and laboratory findings which characterize it as a disease entity are the same. The symptoms include various types of paraesthesiae, muscular pains and cramps, carpopedal spasm, laryngysmus (which may be fatal), occasionally convulsions (often diagnosed epilepsy) and loss of consciousness. Any of these symptoms may be aggravated by exercise. In acute tetany such as occurs following a subtotal thyroidectomy, mental symptoms may appear early and are most disturbing to the patient. In such instances, the patient is unreasonable, extremely irritable, apprehensive of impending disaster and occasionally disoriented. The sudden fall in calcium to a low level may also cause visual symptoms. In chronic tetany one may note behavior changes, mental dullness and failure of memory for recent events. In chronic tetany, one may observe certain cutaneous changes, such as falling out of the hair, increased thickness and scaliness of the skin and marked changes in the nails with associated brittleness. Cataracts are frequent. A slit-lamp examination may be necessary to demonstrate the beginning lens opacities. One can also elicit a positive Chvostek's and Trousseau's sign and increased excitability of the nerves (Erb's sign). The laboratory tests reveal a low serum calcium and a high serum phosphorus. Roentgenograms reveal bones of normal density.

Diagnosis.—The other types of tetany must not be confused with parathyroid tetany. For instance, in patients with tetany associated with hyperventilation, excess of alkali, or loss of hydrochloric acid through vomiting, there is no change in the serum

calcium, but a decrease in the degree of ionization due to the accompanying alkalosis and lowered pH of the blood. The infantile type of tetany is more apt to be confused with hypoparathyroidism, particularly the idiopathic type. The signs and symptoms are the same, but this type of tetany is always associated with a calcium and phosphorus deficiency disease such as rickets or osteomalacia. Here, the serum calcium may be lowered but the serum phosphorus is either normal or reduced and the X-rays show decreased bone density.

Treatment.—In the treatment of parathyroid tetany, one attempts to maintain the serum calcium near its normal level. If this is accomplished, the phosphorus falls and all signs and symptoms of tetany disappear. This can usually be accomplished by the administration of adequate amounts of the calcium salts and cod liver oil or one of the potent vitamin D concentrates. Restriction of the dietary phosphorus intake to about 1.0 gm. per day enables one to maintain a high calcium, low phosphorus intake and thereby insure the absorption of larger amounts of calcium unaccompanied by phosphorus. This allows for elevation of the serum calcium to take place without any appreciable rise in the serum phosphorus.

The amount of calcium salt administered and the number of times per day it is given are far more important than the particular salt employed. From the above, it is apparent that calcium phosphate should be avoided. One can employ calcium lactate in doses of 5 to 10 gms., dissolved in water, four to six times a day, depending upon the severity of the tetany. We prefer calcium chloride because it contains more calcium per gram of salt and because it tends to produce a slight acidosis which in itself is beneficial. We prescribe one-half to one dram of a 45 per cent solution of calcium chloride in a glass of water, four to eight times a day, depending on the severity of the tetany. This should be taken through a glass drinking tube. Cod liver oil (or its equivalent in the form of one of the concentrated preparations) in doses of 8 to 15 c.c. three times a day is sufficient to facilitate maximal absorption of the administered calcium salt. As the tetany improves, the amount of calcium salt and cod liver oil administered can be reduced, similarly the number of doses per day.

Thyroid[29] administered to patients with parathyroid tetany results in an increase in the serum calcium. Unfortunately, it cannot be used alone because the amount necessary to raise the serum calcium to a tetany-free level produces mild symptoms of hyperthyroidism. However, smaller doses in conjunction with the previously mentioned therapy may be employed, particularly in the rare post-operative cases having a co-existing thyroid deficiency. In uncomplicated parathyroid tetany, it is rarely necessary if ample amounts of calcium and cod liver oil are given.

Parathyroid extract (Hanson or Collip) is as a rule used only as an emergency measure because of the dangers of over-dosage, and the possibility of loss of effectiveness when used over a long period of time. Furthermore, parathormone injections are associated with considerable discomfort. Parathormone is also fairly expensive. In the rare case where it is a necessary aid, it should be given in doses of 5 to 10 units, once or twice a day. It should be discontinued as soon as possible.

During the acute distressing period at the onset of severe parathyroid tetany, more heroic measures may be necessary. If so, one can employ either parathormone intramuscularly or calcium chloride intravenously. If parathormone is used, it should be given in doses of 25 to 50 units every twelve hours. Prompt relief of laryngeal spasm, bronchial spasm or convulsions is obtained following the administration of 20 c.c. of a 5 per cent solution of calcium chloride. If given slowly, there are no untoward symptoms. It can be repeated three or four times in any twenty-four-hour period. In such cases, energetic administration of a calcium salt by mouth should be started as soon as the patient's condition has improved.

HYPERPARATHYROIDISM

Historical.—An adequate description of a previously unrecognized disease is often necessary to establish the fact that it is not a rarity. Such has been our experience with hyperparathyroidism, the first clinical diagnosis of hyperparathyroidism having been made independently by Mandl[30] in 1925 and by DuBois[31] in 1926. Mandl, acting on the suggestion of previous workers that generalized osteitis fibrosa cystica might be due to a parathyroid tumor, explored the parathyroid glands of such a patient, found a parathyroid tumor, removed it, and noted improvement. DuBois, studying a similar individual, noted the same alterations in the calcium and

phosphorus metabolism that had been observed in normal individuals receiving 100 units of a potent parathyroid extract and therefore concluded that generalized osteitis fibrosa cystica was due to a state of hyperparathyroidism. The number of cases reported since these epoch-making discoveries is sufficient proof that hyperparathyroidism is not a rare disease.

The two cases reported, one by Mandl, the other by DuBois, represent the classical form of hyperparathyroidism originally described by Von Recklinghausen.[32] This form of hyperparathyroidism should offer no diagnostic difficulties. It represents the end stages of hyperparathyroidism of long duration. Untreated, it is a progressive disease, which is usually fatal. Such cases are characterized by skeletal, renal, gastro-intestinal and constitutional symptoms. The metabolic alterations are hypercalcemia, hypophosphatemia, elevated serum phosphatase, hypercalcinuria, and hyperphosphaturia. The skeletal symptoms and changes are obvious, being manifested by pain, bone tumors, bone cysts, frequent fractures, disabling deformities, loss of height, etc. These are the tell-tale marks of the classical form of hyperparathyroidism or Von Recklinghausen's disease of the bone. Appropriate treatment at this stage of the disease will not permit complete restitution of the patient to a normal status because the skeletal changes are too marked and renal impairment too often present. Therefore, it should be our aim to make the diagnosis of hyperparathyroidism before such complications have occurred. In order to do this, one must acquaint himself with the varied nature of the presenting symptoms encountered in the other forms of hyperparathyroidism.[33] Then and only then will one be in a position to make the correct diagnosis as well as appreciate the fact that the most characteristic symptom may be closely simulated by other skeletal diseases.

Etiology.—The clinical entity, hyperparathyroidism, may be due to a hyperfunctioning adenoma of one parathyroid (neoplasia) or generalized hyperplasia of all the parathyroid glands.[33, 34] The localized tumor (adenoma or neoplasia) may involve a part of a gland, a single gland, or rarely parts of two glands. Hyperplasia is characterized by diffuse uniform involvement of all the glandular tissue. Such hyperplasia may represent the *wasser helle* or water-clear cell type and, occasionally, the chief cell type.

In speaking of hyperplasia of the parathyroid glands, one must appreciate that such can occur without any evidence of hyperparathyroidism. This type is known as functional or compensatory hyperplasia and may occur in long-standing calcium privation, rickets, osteomalacia, pregnancy and nephritis. In such instances, hyperplasia occurs because of the need for the hormone to maintain a normal serum calcium level, whereas, in hyperparathyroidism due to generalized hyperplasia of all parathyroid glands, there seems to exist some factor which drives all parathyroid tissue to produce more hormone than is needed, and, in consequence, osteitis fibrosa results. This type of hyperparathyroidism is analogous to the hyperthyroidism of exophthalmic goitre. Albright[35] suggests that this type of hyperparathyroidism may result from an increased secretion of the parathyreotropic hormone of the pituitary. The experimental work of Hertz and Kranes[36] and a review of the pathological findings in certain reported cases lends support to such a theory. The three cases of hyperparathyroidism due to hyperplasia of the parathyroid glands observed in this clinic were all marked cases exhibiting a hypercalcemia and hypophosphatemia responding to operative treatment.[35] They all had renal calculi (hyperparathyroidism with nephrolithiasis). The parathyroid hyperplasia in these three cases was of the water-clear cell type.

Calcium and Phosphorus Metabolism Changes.—The resulting increased production of the parathyroid hormone in either instance produces the same characteristic changes in the calcium and phosphorus metabolism observed in a normal individual receiving an active parathyroid extract.[21] Such alterations consist of:

1. An elevated serum calcium.* Values as high as 15 mgm. per 100 c.c. are not uncommon; values as high as 23.6 mgm.[37] per 100 c.c. have been reported. Any serum calcium value of 11 mgm. per 100 c.c. or over should be regarded as suspicious and therefore repeated.

2. A low serum phosphorus.* Values as low as 1.5 mgm.[33] per 100 c.c. have been observed. A

*All blood for serum analyses should be obtained fasting. Chemically clean syringes and centrifuge tubes must be employed. The serum calcium is done according to the Fiske and Logan[38] method, the serum phosphorus as described by Fiske and Subba Row,[39] the serum phosphatase after the method of Bodansky.[40]

serum phosphorus of 3.0 mgm. per 100 c.c. or lower, accompanied by an increased serum calcium, is almost always indicative of hyperparathyroidism because of the rarity of this combination in other diseases. The high serum calcium of multiple myeloma or metastatic malignancy is usually accompanied by a high serum phosphorus. The one exception to a high serum calcium, low serum phosphorus in hyperparathyroidism is observed in cases where, because of renal impairment, the serum phosphorus is elevated.

3. An elevated serum phosphatase.* This is demonstrable in all patients with hyperparathyroidism with detectable bone disease. As stated before, its serum level is directly related to the extent of the bone disease, particularly the degree of osteoblastic activity and independent of the degree of hyperparathyroidism. Therefore, in individuals with hyperparathyroidism without detectable bone disease, it is normal.

4. An increased calcium excretion. In an uncomplicated case, the increased calcium excretion is entirely urinary, the fecal excretion being unaffected. The calcium excretion may be increased three or four fold. In individuals with renal impairment, part of the increased excretion is fecal.

5. An increased phosphorus excretion. This is also entirely urinary. In the complicated cases, the urinary phosphorus excretion may not be affected.

Pathology.—The bones, being the only store-house of calcium and phosphorus in the body, are, in consequence, the source of the increased excretion of these elements. Unless the intake is equal to or in excess of the excretions, generalized decalcification will result. As Jaffee[41] states, an increase in the osteoclasts is the first histological evidence of the increased calcium and phosphorus excretion, the other bone changes occurring later. Being a disease of endocrine origin, hyperparathyroidism must exert its fundamental action, demineralization, on the entire skeleton.

However, the most pronounced degree of change and transformation is observed in the long tubular bones; then come the spine, sacrum, pelvis, skull, jaw bones and the flat bones of the thorax.[41] The short tubular bones, phalanges and tarsal bones, show the least transformation. When a long tubular bone is examined, one may find evidence of recent or healed fractures which may have produced gross bone deformity. The transverse diameter is apt to be increased at one or more points. The periosteum is usually thin. The medullary cavity may be filled with grayish-white fibrous tissue interspersed with fine reticulated bone. Single or multilocular cysts may be present, often extending to the periosteum. In and between such cysts, one may find evidence of recent or old hemorrhage. In other areas, the brown tumors of Von Recklinghausen (osteoclastoma) may be seen.

The vertebral column may be deformed, showing marked scoliosis or kyphosis. Because of the marked decalcification of the vertebral bodies, the elastic intervertebral discs expand, assuming an elliptical shape with resultant reduction of the superior-inferior diameter of many of the vertebrae, the fish-bone type vertebrae. Such changes account in part for the loss of height observed in the advanced cases.

Other gross skeletal changes may be present in the thoracic cage, the pelvis and cranium. The ribs are often atrophic, fractured, or irregularly shaped, thus producing a misshapen thoracic cage. The pelvis can become asymmetrical, misshapen and reduced in size. The bones of the skull may be atrophic and pliable; in other instances, sufficiently thickened to suggest Paget's Disease.[41] They can be cut easily with a knife. The increased fibrosis, cortical thinning, brown tumors or cysts may be demonstrable in any of the bony structures. The fractures usually occur at the site of a tumor or cyst.

On histological examination, one observes an increase of osteoclasts during any active phase of absorption, on the surfaces of haversian canals, trabeculae and Howship's lacunae. The tendency to resorption far exceeds new bone formation, which appears in the connective tissue. Thus increased osteoclastic activity is the special histological feature in hyperparathyroidism, the osteoblasts associated with new bone formation always being less pronounced than the osteoclasts. Both these cells are derived from the reticular cells of the bone marrow. The connective tissue increase and marrow fibrosis observed probably represents a proliferation of the reticular cells necessary for the formation of osteoclasts and osteoblasts. In such fibrous foci, giant cells and considerable extravasated blood may be present. The replacement of considerable bone marrow wih fibrous tissue will occasionally lead to sufficient decrease in the hemopoietic elements to cause an anemia and leukopenia. A bone may be exten-

*See footnote on previous page.

sively involved and yet show no brown tumors; if present, they vary in size and number. They appear as nests of cellular fibrous tissue containing large numbers of giant cells and blood pigment. These giant cells are identical with osteoclasts and therefore such cell nests are often called osteoclastoma. The brown color of such tumors is evidently dependent on hemorrhage. There is also considerable variability among the cysts. They may be entirely absent or very numerous. They may be microscopic in size or recognizable grossly. In the latter instance, if numerous, the bone gives the appearance of extensive cystic degeneration. They may be unilocular or multilocular, of sufficient size to expand the shaft of the bone and be the underlying cause of a fracture. Their possible mode of origin may vary. They may begin as a result of edema and degeneration of the fibrous tissue; such spaces may enlarge or fuse. Cysts may also result from degeneration occurring within the giant cell tumor areas.

From the above description, it is apparent that the skeletal changes of hyperparathyroidism are dependent on the activity of the hyperfunctioning parathyroid gland or glands as well as the duration of such hyperactivity. Other factors influencing the degree of skeletal change are the age of the patient, the calcium intake, pregnancies and the existence of other disease states. Thus a young adult who has always been on a high calcium intake might have hyperparathyroidism of short duration and yet show minimal or no bone changes on X-ray. If an elderly individual with osteoporosis develops the disease, the bone changes may be marked even though the degree of hyperparathyroidism is mild and of short duration. Therefore, in hyperparathyroidism the bone changes may not be demonstrable without microscopic examination, or one may encounter such marked bone changes (generalized osteitis fibrosa cystica) that the diagnosis is obvious on superficial inspection of the patient. It is probable that the degree of bone involvement is an index of the duration of the disease and not its severity.[33]

The hypercalcinuria and hyperphosphaturia of hyperparathyroidism are often responsible for the formation of renal calculi.[42] The formation of such calculi will depend on the amount of calcium and phosphorus excreted in the urine, the fluid intake, the alkalinity of the urine and the degree of polyuria. Thus the presenting symptom in an individual with severe hyperparathyroidism of short duration may be renal colic. In such instances the bones may be normal by X-ray. Thus hyperparathyroidism should be suspected in any patient with urinary stones.[33, 42] If this is done with regularity more patients will be so diagnosed before skeletal changes have occurred.

This and the other types of renal complications encountered in hyperparathyroidism have been studied in detail by Albright.[42] He divides the renal complications into three types:

1. Pyelonephritis secondary to the formation of calcium phosphate stones.

2. Nephrocalcinosis. In this type, calcium phosphate is precipitated out in the tubules, forming concretions which eventually lead to inflammatory changes, sclerosis and contracted kidneys. In certain instances the calcium deposits in the kidney (nephrocalcinosis) are demonstrable by X-rays. In such patients the hypophosphatemia may be absent, the hypercalcinuria decreased, the fecal calcium excretion increased and the partition of phosphorus in the urine as compared with the feces is less elevated. Patients with this type of renal lesion may be erroneously diagnosed chronic glomerular nephritis. In this connection, it should be pointed out that generalized hyperplasia of the parathyroids may occur as a result of chronic nephritis.[42]

3. Calcium deposits occurring in the kidney as well as other organs may take place in acute parathyroid poisoning with a resulting anuria and death in a few days. No other chronic renal changes should be present in this type of renal impairment. Metastatic calcification is an extremely rare finding post-mortem, but it can be produced with toxic doses of parathyroid extract.

Classification of Types of Hyperparathyroidism.—Therefore, depending upon whether the skeletal or renal pathology predominates and the degree of change present in either system, it is possible to describe several different types of hyperparathyroidism. Such a classification[33] of clinical types is given in the hope that every practitioner will appreciate that the other forms of hyperparathyroidism are not rarities but conditions which he will not infrequently meet.

1. Classical Hyperparathyroidism (Von Recklinghausen's disease or generalized osteitis fibrosa cystica). The skeletal signs and symptoms predominate and consist of pain, frequent fractures, bone

deformities, cysts, tumors and generalized decalcification.

2. Osteoporotic Form of Hyperparathyroidism. This type is indistinguishable from the osteoporosis of osteomalacia, hyperthyroidism, inactivity or senile osteoporosis, except by means of the chemical or pathological laboratory. In such cases complete metabolic studies may be necessary to rule hyperparathyroidism in or out.

3. Hyperparathyroidism with Nephrolithiasis. The presnting symptom may be renal colic. Skeletal changes may be absent, minimal or maximal.

4. Acute Parathyroid Poisoning. There has been only one case reported which might have been so diagnosed and classified.[66]

5. Hyperparathyroidism Simulating or Complicated by Paget's Disease. Several patients have been reported as having both diseases. The exact relationship is unknown, but the author believes the existence of the two diseases in the same individual is coincidental.

Symptomatology and Physical Findings.—There is no one symptom which is diagnostic of hyperparathyroidism. Because of its insidious onset and extremely varied symptomatology, its existence is often not suspected and therefore often incorrectly diagnosed. Such patients are in consequence called hypochondriacal, neurasthenic, or incorrectely labeled rheumatism, arthritis, neuritis, bone tumor, flat feet, etc. Many of their complants being referable to the skeletal system, diagnostic X-rays may give the first clue, although they are also very often incorrectly interpreted as osteomalacia, osteoporosis, enchondroma, solitary cyst, renal rickets, sarcoma, etc. Many of the symptoms disappear immediately after operation on the parathyroids. Following operation, the patient is much more conscious of the previously existing vague symptoms.

Although no one symptom is characteristic of the disease, a thorough appreciation of the symptomatology will allow one to suspect it often and occasionally to make the correct diagnosis. The symptoms can be divided into three groups.[33] Those due to:

1. The hypercalcemia.
2. The skeletal changes.
3. The increased excretion of calcium and phosphorus.

Symptoms Due to Hypercalcemia.—The symptoms referable to the gastro-intestinal tract as well as those of a more general nature fall in this group. Those referable to the gastro-intestinal tract are anorexia, nausea, vomiting, pain and constipation. Anorexia and constipation are common and may be the presenting symptoms. Intractable nausea and vomiting are occasionally present. Lassitude, weakness, easy fatigability and weight loss may be the only symptoms early in the disease. Hypotonia is common and probably is the cause of some of the skeletal symptoms. This may involve the joint structures as well as the muscles. The hyperextensibility and hyperflexibility may be sufficiently great to allow the patient to do contortionist tricks. The hypercalcemia also causes decreased excitability of the nerves, but such determinations are neither practical nor necessary.

Symptoms Due to Skeletal Involvement.—From what has been said before, it must be apparent that the symptoms falling in this group are dependent on the severity of the case, its duration, etc. Therefore, one may encounter patients with no bone symptoms; in others they represent the major complaint, such as spontaneous fractures, bone pain, bone tenderness, bone tumor, kyphosis, loss of height, waddling gait or limp. The tumors of the jaw are often called epulis. Bone deformities are a later manifestation with the exception of the spine.

Symptoms Related to the Hypercalcinuria and Hyperphosphaturia.—Polyuria and polydipsia are usually present and may be so marked as to suggest diabetes insipidus. The large quantities of water necessary for the increased excretion of calcium and phosphorus are responsible for the polyuria. This fluid loss is compensated for by an increased thirst and subsequent increased fluid intake. Nocturia may be a distressing feature of the polyuria. Enuresis is occasionally present. Painful urination may be caused by the passage of gravel or a small stone. Renal colic or some other manifestation of urinary calculi may be the first and only symptom. In such instances, no bone changes may be demonstrable by X-ray. Ten patients, in a series of twenty-five proven cases, were discovered at the Massachusetts General Hospital as a result of doing routine serum calcium and phosphorus determinations on all patients with urinary calculi. Only five of the twenty-five cases had bone disease without renal disease. Therefore, we are of the belief that the nephrolithiasis type of hyperparathyroidism may in the future be the commonest type to be recognized.

X-rays.—The roentgenologist will have no difficulty in making the diagnosis, with marked generalized osteoporosis, cysts, tumors, fractures, bone deformities and a granular, mottled appearance of the skull.[43, 44] However, one must remember that Von Recklinghausen's disease is rare and not representative of the commoner types of hyperparathyroidism. As previously stated, skeletal changes may not be demonstrable by X-rays. The presence of cysts, bone tumors, fractures or deformities is not sufficient for an X-ray diagnosis. Being a metabolic disease, hyperparathyroidism must exert its fundamental action, demineralization, on the entire skeleton. Therefore, if generalized decalcification is not associated with such cysts, tumors, etc., one is forced to conclude that he is dealing with a localized disease. From the pathologic description it is obvious that X-ray findings are not pathognomonic except in the classical form. The bones may show no demonstrable change. Again, a generalized decalcification indistinguishable from that observed in osteomalacia, senile osteoporosis, multiple myeloma, or pituitary basophilism may be the only demonstrable deviation from the normal. In such instances, lateral roentgenograms may disclose the biconcave vertebral bodies (fish-bone vertebrae). They are merely an expression of the bone softening present and are seen in other diseases with associated generalized decalcification. Cysts may be entirely absent, numerous, vary considerably in size, or be present in only one or two bones such as the metacarpals. There may be expansion of the overlying bone. In long-standing cases, there is marked loss of substance in the terminal phalanges. The loss of supporting structure results in clubbing of the fingers. Tumors may occur in any portion of the skeleton but are more common at the ends of the long bones or in the ribs and jaws. Absence of the lamina dura may suggest the diagnosis but is only a manifestation of generalized decalcification.[45] The miliary mottled and granular appearance is most commonly observed in the flat bones, particularly the skull. This appearance is due to newly formed, closely set trabeculae which have replaced the original bones. However, the roentgen appearance of the skull is variable; in some instances it is thickened, the thickening being generalized or irregular.

Therefore, unless advanced bone resorption and numerous newly formed trabeculae are present, the granular, mottled appearance is not demonstrable. In long-standing cases, the long bones may be practically free of trabeculae, the cortex extremely thin, and the shadow cast gives a very light, homogeneous appearance. In such cases, the bone cysts, tumors, fractures, bone deformities, etc., will probably be present. In a rare case, generalized decalcification may be associated with a lesion or lesions characteristic of Paget's disease. Whether this is anything more than coincidence cannot be definitely stated at this time. Thus it is obvious that X-rays taken for other reasons may give the first clue of the existence of the disease.

Differential Diagnosis.—From the above, it must be apparent that hyperparathyroidism is a distinct disease entity,[46] which may mimic several other diseases. Conversely, many diseases may mimic hyperparathyroidism. Therefore, one must appreciate the other causes of the varied symptomatology observed in hyperparathyroidism. It is easy to understand why other bone diseases might be misdiagnosed hyperparathyroidism. Once the diagnosis is suspected, its confirmation or exclusion is dependent on the chemical or pathological laboratory. In most instances determination of the calcium and phosphorus content of the serum suffices, occasionally complete metabolism studies are necessary, rarely a bone biopsy. In the mild border-line case (the osteoporotic type), one may be required to resort to all available diagnostic measures. In very rare instances, such observations may have to be repeated at some subsequent date in order to rule hyperparathyroidism in or out. Early confirmation or exclusion of hyperparathyroidism is necessary if we are to prevent the marked skeletal changes and complications of long-standing hyperparathyroidism from occurring. Certainly one is not justified in advising exploration of the parathyroid glands because of the existence of demonstrable skeletal changes until he has obtained confirmatory evidence from the chemical or the pathological laboratory that such skeletal changes are due to hyperactivity of the parathyroid glands. For this and other reasons we cannot sanction parathyroidectomy in patients suffering from arthritis,[46, 47, 48] osteitis deformans[49, 50, 51] and other unrelated diseases,[52] as advocated by certain workers. The skeletal diseases most often confused with hyperparathyroidism which must therefore be excluded are:

Senile Osteoporosis.—The term, osteoporosis, implies rarefaction of the skeleton. Such bones are

very transparent to roentgen rays. Its presence is of no diagnostic significance. It occurs in all aging and senile persons; therefore, the term, senile osteoporosis. It must not be confused with the osteoporosis resulting from inactivity, an inadequate diet or endocrine diseases (such as hyperparathyroidism, hyperthyroidism, or a basophilic pituitary adenoma). The conditions operating to produce senile osteoporosis are those related to the production of the general involutionary process of aging. According to Pommer,[53] in senile persons the physiological deposition of new bone is decreased, whereas physiological resorption continues; in consequence, there results a progressive thinning of the bone. Therefore, one observes the kyphosis of the aged, the fish-bone type of vertebrae and fractures, particularly of the neck of the femur. Grossly, one observes fatty atrophy of the marrow, thinning of the cortex and trabeculae. Microscopically, the osteoid borders are not demonstrable and there is no increase of osteoclasts, marrow fibrosis, etc., as seen in hyperparathyroidism.

X-rays of such patients may show such marked rarefaction as to suggest hyperparathyroidism. It resembles the mild osteoporotic form with borderline blood values and therefore may be difficult to differentiate. The symptoms of hyperparathyroidism due to the hypercalcemia and hypercalcinuria are absent, the skeletal symptoms minimal. Bone pain may be present; fractures and deformities may occur. The chemical findings usually enable one to differentiate it from hyperparathyroidism. The serum calcium is normal, the serum phosphorus normal or reduced, and the serum phosphatase normal. If such data are not sufficient to exclude hyperparathyroidism, metabolic studies and bone biopsy may be necessary. In such instances the bone biopsy is of diagnostic importance.

Osteomalacia.—Osteomalacia has often been confused with osteitis fibrosa. Particularly was this true prior to our better understanding of calcium and phosphorus metabolism in health and disease. This was due in part to the fact that parathyroid hyperplasia is sometimes present in osteomalacia.[54] However, Erdheim, as early as 1907, postulated that such hyperplasia was the result of the bone disease and not the cause of it (compensatory hyperplasia). Since then it has been definitely established that osteomalacia is a calcium and phosphorus deficiency disease resulting from a low calcium intake and vitamin D deficiency. The state of pregnancy and lactation will accentuate the disease. It does occur endemically in certain regions such as northern China, India and Japan. In this country it is a rare disease, its incidence being lower than that of hyperparathyroidism. Most of the cases we have observed have been individuals with a fatty diarrhea and a resulting lack of absorption of the fat-soluble vitamin D.

Because of the existing vitamin D deficiency and lack of absorption of adequate amounts of calcium and phosphorus, the bone tissue shows a definite pathological abnormality, namely, a failure of calcium and phosphorus deposition in the osteoid tissue. In consequence, one observes wide osteoid borders. Osteoblasts are far in excess of osteoclasts. There exists a less marked increase of fibrous tissue, etc., than is seen in osteitis fibrosa. Here, again, a bone biopsy is pathognomonic.

The symptoms complained of are few as compared with hyperparathyroidism. Although skeletal pain is common, the presenting symptom may be secondary to the collapse of a decalcified fish-bone vertebrae. In some patients the symptoms due to the associated infantile type of tetany are the reason for seeking medical aid. The bones bend rather than fracture. The roentgenograms show generalized decalcification. The serum calcium is normal or low, the serum phosphorus is low and the serum phosphatase high. In such cases, an adequate calcium and phosphorus intake and sufficient vitamin D results in a rapid therapeutic response.[9, 55]

Osteoporosis of Hyperthyroidism.—This form of generalized osteoporosis is sometimes seen in long-standing exophthalmic goitre. The osteoporosis of hyperthyroidism is evidently due to increased lacunar absorption. It may persist for years after. It has been previously discussed under normal calcium and phosphorus metabolism.

Osteoporosis of Disuse or Inactivity.—Generalized osteoporosis of this type is occasionally encountered in bed-ridden patients with reduced activity such as ankylosing arthritis. Here the cause of the decalcification should be obvious. The blood chemistry is normal.

Osteoporosis Due to Basophilic Adenoma of the Pituitary.—Generalized osteoporosis[56] is also observed in this recently described syndrome (Cushing's syndrome).[57] There is some evidence to suggest that this type of osteoporosis may be due to

hyperplasia of the parathyroid glands. In one of his cases, calcium and phoshorus metabolism studies revealed a normal serum calcium, a reduced serum phosphorus and a hypercalcinuria. The bone biopsy, however, more nearly resembled that seen in senile osteoporosis. Whether this is or is not a distinct disease entity, the existing obesity, hirsutism, purplish atrophic striae, amenorrhea and hypertension should serve to differentiate it from the osteoporotic type of hyperparathyroidism.

Osteoporosis Due to Suprarenocortical Tumors.—A syndrome presenting many of the characteristics of Cushing's syndrome is occasionally due to a suprarenal adenoma.[58] Surgical removal of the adenoma in several instances has been followed by complete regression of the abnormalities characterizing the syndrome. Autopsy in two other cases[58] revealed a normal hypophysis. Osteoporosis, although present, was confined chiefly to the vertebral column. The blood values were similar to those described under Cushing's syndrome. Here, again, the physical characteristics of the syndrome prevent one from confusing it with hyperparathyroidism.

Paget's Disease.—Paget's disease and hyperparathyroidism have very little in common. The signs and symptoms of the two diseases are not the same. There is no evidence to substantiate the view held by some that Paget's disease is a form of hyperparathyroidism.[49, 50, 51] The reasons for contradicting such a view are:

1. In Paget's disease, the changes are sometimes confined to one lone bone and, as Schmorl[59] points out, although often polyostatic, it is never generalized. However, in hyperparathyroidism, as one would expect in a disease of endocrine origin, the effect is a generalized one, every bone in the body being involved. This may not be apparent in the gross but is on microscopic examination.

2. Paget's disease occurs in older people, usually males, and is regularly associated with arteriosclerosis, whereas hyperparathyroidism is met with in all age groups, more commonly in females, and arteriosclerosis is not a common finding.

3. Schmorl[59] was unable to show any significant histological changes in the parathyroid glands of 138 autopsied cases of osteitis deformans.

4. The calcium and phosphorus metabolism changes are not of the type observed in hyperparathyroidism. The serum calcium is normal or only slightly elevated and the serum phosphorus slightly elevated, normal, or slightly reduced. The serum phosphatase is always elevated, being much higher in a case of Paget's disease than in one of hyperparathyroidism with a comparable degree of bone involvement. In a few cases we have observed slight increases in the calcium and phosphorus excretions, but the increased excretions were not confined solely to the urine as they are in hyperparathyroidism.

There are other differences. Malignant bone tumors develop in a fair number of cases of Paget's disease; such is rarely, if ever, observed in hyperparathyroidism. Fractures occur very often in hyperparathyroidism and seldom in Paget's disease. Renal calculi do occur but are less frequent than in hyperparathyroidism.

It may be difficult or occasionally impossible to distinguish histologically Paget's disease from hyperparathyroidism. However, in Paget's disease new bone formation is always in excess of bone resorption. The newly formed bone of Paget's disease takes on a distinguishing mosaic appearance because of the numerous thick, irregular, dark staining cement lines.

Roentgenograms usually serve to separate the two diseases. In Paget's disease, lesions may be confined to one or two bones. In most cases one can demonstrate some normal bone structure, most frequently in the small bones of the hand. The bones involved may be bowed and show the characteristic cortical enlargement (hyperostosis) as compared with the normal or thin cortex of osteitis fibrosa. The moth-eaten appearing skull usually shows this same thickening as compared with the thin moth-eaten skull of most patients with hyperparathyroidism. As Schmorl[59] pointed out, the bones most frequently involved are those subjected to the greatest stress and strain.

If all of these facts are taken into consideration, there is very little excuse for confusing the two diseases or thinking they are causally related. Nevertheless, we have included, under clinical types,[33] "hyperparathyroidism simulating or complicated by Paget's disease." In the two cases observed in this clinic, the roentgenograms were characteristic of hyperparathyroidism except for typical focal lesions of Paget's disease. In one case, the existence of both diseases has been proven by bone biopsies. These isolated cases may represent the coincidental

finding of both diseases in one individual. However, the hyperparathyroidism with its resulting increased osteoclastic activity may have been responsible for making manifest a focal lesion of Paget's disease which would have otherwise remained dormant. Routine calcium and phosphorus determinations on all patients with Paget's disease may disclose more cases of this sort, although this has not been our experience in a large series of cases of Paget's disease.

Renal Rickets.—There seems little doubt but what chronic renal insufficiency may lead to rachitic-like changes in the skeleton.[60] These bone changes have been attributed to the existing acidosis. In one instance the daily administration of large doses of soda bicarbonate resulted in correcting the acidosis and healing of the bone lesions.[61] In all cases of so-called renal rickets, it is important to establish whether one is dealing with true renal rickets or hyperparathyroidism, with associated renal lesions described as the type II lesions.[42] The evolution of the symptomatology, bone symptoms antedating the renal symptoms, or *vice versa*, will often be of assistance. In either instance, the serum phosphorus is elevated. In true renal rickets the calcium is depressed, whereas, in hyperparathyroidism with type II renal lesions the serum calcium is normal or elevated.

Solitary Cysts.—Single cysts usually occur in the epiphyses of the long bones. They may occur in more than one bone. Histologically, they are indistinguishable from the cysts observed in hyperparathyroidism. Such cases can be distinguished from hyperparathyroidism by the demonstration of an otherwise normal skeleton. The serum calcium, phosphorus and phosphatase are all normal. They may represent a healing process secondary to trauma or infection. Some probably represent healing reaction in a giant cell tumor.

Solitary Benign Giant Cell Tumor.—These tumors may resemble histologically the giant cell tumors of osteitis fibrosa. Here again, the blood values are normal and generalized osteoporosis is not demonstrable.

Osteogenesis Imperfecta (Fragilitas Ossium, Brittle Bone).—Osteogenesis imperfecta might be confused with osteitis fibrosa because of thin bones and frequent fractures. However, such confusion is hardly justified in the presence of blue sclerae and deafness. It is a hereditary disease, characterized by failure to form normal osteoid tissue. The blood chemistry is normal. The calcium and phosphorus excretions are not increased.

Multiple Myeloma.—Multiple myeloma may simulate hyperparathyroidism. Decalcification, with or without mottling, fish-bone type of vertebrae (often crushed), irregular areas of decreased density and areas of bone destruction are often demonstrable. The decalcification is rarely if ever generalized. Hypercalcemia is often present. It fluctuates considerably more than in hyperparathyroidism and may or may not be associated with an increase in serum proteins. The serum phosphorus is usually elevated; rarely does it approach the hypophosphatemia level characteristic of osteitis fibrosa. The serum phosphatase is normal. Secondary renal changes are frequent in multiple myeloma and compensatory parathyroid hyperplasia has been observed. Bence-Jones protein, if present, does not establish the diagnosis of multiple myeloma because it can occur in Von Recklinghausen's disease. However, in such cases the Bence-Jones proteinuria is minimal, whereas, in multiple myeloma it is present in a marked degree. In occasional cases bone biopsy may be necessary to establish the correct diagnosis.

Metastatic Malignancy.—The differentiation of this condition from hyperparathyroidism should never cause serious difficulty. Generalized decalcification is not present, the uninvolved bones are normal. Metastases seldom occur below the knees or elbows. Hypercalcemia has been reported but without a co-existing hypophosphatemia.

Lipoid Dystrophies:

(a) Schuller-Christian's Disease. — Schuller-Christian's disease should not be confused with hyperparathyroidism. It occurs most frequently in early childhood. Roentgenographically, the bone changes represent a destructive process, usually of the flat bones. The unaffected bone or uninvolved portions of the same bone exhibit a normal structure in contrast with the diffuse involvement of hyperparathyroidism. The blood chemistry in the few cases observed has been normal.

(b) Gaucher's Disease.—Gaucher's disease may show some generalized decalcification secondary to bone marrow invasion. Such decalcification is more apparent in the ends of the femur and humerus. Skull changes appear very late in the disease. The

anemia, splenomegaly, etc., enable one to differentiate it from osteitis fibrosa.

Erythroblastic Anemia.—Although the roentgenograms may simulate hyperparathyroidism, clinically, the differentiation is not difficult.

Radium Poisoning.—Here, again, the sharply demarcated areas of bone destruction without generalized decalcification are sufficient to rule out hyperparathyroidism.

Treatment:

Medical.—This falls under two headings, roentgen therapy and dietary treatment. No beneficial metabolic or clinical results have been observed in this clinic in treating hyperparathyroidism with roentgen rays. The cases so treated thus far have all been due to parathyroid adenomas. Whether one would experience the same results in cases due to generalized hyperplasia is unknown. Unfortunately, we have no way of differentiating these two types of hyperparathyroidism without exploration of the parathyroid glands. One can prevent decalcification as well as demonstrate skeletal improvement with a high calcium, a high phosphorus, or a high calcium-high phosphorus diet. However, such treatment increases the danger of renal complications and is therefore contraindicated.

Surgical.—The surgical treatment of hyperparathyroidism has been very thoroughly discussed by Churchill, Cope, and Walton.[63, 64, 65] It is unusual to be able to demonstrate a palpable parathyroid gland on physical examination. This is due to the fact that they lie deep in the neck or mediastinum, as well as the ability of soft parathyroid tissue to mold itself to conform to the surrounding structures.

Having established a diagnosis of hyperparathyroidism, there is no way of determining prior to operation whether it is due to a lone adenoma or hyperplasia of all parathyroid glands. In the case of a large parathyroid tumor, the roentgenologist may be able to locate the tumor. Therefore, such pre-operative studies should be made in all cases. X-rays of the upper mediastinum may demonstrate a calcified encapsulated tumor or a displaced trachea. A substernal goitre may occasionally be misleading. The tumor may lie in close proximity to the esophagus. Therefore, anterior and lateral fluoroscopy during the administration of thick barium may be of help.

The chief operative difficulty is locating the parathyroid tumor. The surgeon must know the normal and aberrant positions of the parathyroid glands. He must realize that they may be encountered anywhere from the pharynx to the mediastinum, although none have been found above the upper poles of the thyroid. They are often in contact with the upper or lower poles of the thyroid. However, they have been located in the anterior and posterior mediastinum, behind the esophagus and trachea and in the thyroid sulcus. Parathyroid tumors have been recorded as buried in the thyroid gland.

The first surgical exploration of the neck offers the best chance of finding the parathyroid adenoma. The scar tissue of a previous operation greatly increases the difficulties. Meticulous hemostasis is essential, as staining of tissue with blood may make the recognition of parathyroid tissue impossible. Therefore, Churchill advises the ligation of even the smallest vessels before sectioning, the most careful handling of all tissues and sharp dissection, because the slightest trauma to a parathyroid gland and the resulting hematoma may completely mask its identity. Furthermore, such trauma or interference with the vascular supply of the normal glands enhances the possibility of post-operative tetany.

Parathyroid glands have a characteristic reddish brown color and smooth surface. They are most often confused with lymph or hemolymph nodes, lobules of thyroid tissue and fetal fat. With experience the parathyroid glands can be identified with great accuracy, because of their shape, color and tiny vascular pedicle. Given a marked degree of hyperparathyroidism one can expect to find a sizable tumor. The smallest gland encountered in this clinic was one measuring 1x0.5x0.5 cm. The patient had the osteoporotic type of hyperparathyroidism of minimal degree. A small amount of normal parathyroid tissue was still demonstrable at the periphery of the gland. Therefore, one need not stop to examine each minute body of tissue encountered. Furthermore, when operating on a patient with an unequivocal diagnosis of hyperparathyroidism, the removal of normal parathyroid tissue is absolutely contraindicated because no beneficial results will ensue and the danger of post-operative tetany is greatly enhanced when the tumor is removed at a subsequent operation. The removal of a lobe of the thyroid is not justified until a careful block dissection of the neck and palpation of the

mediastinum have been made. If no tumor is found after such thorough exploration, the diagnosis must be rechecked by repeating the metabolic studies and performing a bone biopsy. The latter can be made at the conclusion of the first exploration. If all data are still consistent with the diagnosis of hyperparathyroidism, exploration of the mediastinum by section of the sternum is indicated. In the one case in which this operation was performed, the tumor was found lying just below the left innominate vein. The patient had had six previous operations in an attempt to find the tumor. Thus, with some knowledge of the possible locations of the parathyroids and patience, the surgeon will usually be able to identify all of the parathyroid glands. Such an extensive search is not indicated unless one is dealing with hyperparathyroidism due to generalized hyperplasia and not an adenoma.

In order to establish which type of hyperparathyroidism one is dealing with as well as the extent of the neck exploration necessary, the surgeon should have a pathologist present at the time of the operation. He can determine by means of a frozen section from a biopsy specimen whether he has disclosed parathyroid tissue. If it is, he can further tell whether it is normal, hyperplastic or representative of an adenoma. If normal, one can exclude osteitis fibrosa due to general hyperplasia of the parathyroids. If it is hyperplastic, the surgeon should continue his search until all parathyroid glands have been identified. If an adenoma is disclosed, one can usually assume it represents the causative agent, although occasionally two exist.

In the patient with adenoma of one parathyroid gland, one is tempted to remove it *in toto*. In this clinic such is done providing one or more normal parathyroid glands have not been removed at some previous operation. If such is the case, a subtotal resection is done in order not to run the risk of producing the serious complication of permanent hypoparathyroidism. The post-operative tetany following the removal of a parathyroid tumor may be dangerous. The most severe tetany we have observed has occurred in patients with the most extensive decalcifiation. In one such instance where the remaining parathyroids were presumably intact and had not been disturbed at operation, very serious tetany ensued following the removal of the parathyroid tumor. In such cases we believe the tetany results because of too rapid deposition of calcium and phosphorus in the previously depleted bones and not because of atrophy of disuse of the other parathyroid glands. Therefore, in such cases one should never attempt more than a subtotal resection of the tumor. If this is done, severe tetany of months' duration will be avoided. If the surgeon chooses to do a subtotal resection, he should leave behind, with a good blood supply, a piece of tumor considerably larger than a normal gland. Its location should be clearly marked by a silver wire suture. If there is a recurrence of the hyperparathyroidism, removal of the remainder of the gland should offer no difficulty.

The treatment of generalized hyperplasia of all parathyroids cannot be definitely stated at this time. It is obvious that total surgical removal is contraindicated. The surgeon must make every effort to see all parathyroid tissue in order to know exactly what is being removed and what is being left behind. To date, it has been the practice in this clinic to remove approximately three-quarters of the total parathyroid tissue identified.[35, 64] Following this simple rule has given satisfactory results to date in the three cases so treated in this clinic. It is better to err on the safe side than to induce a chronic parathyroprivic state. Residual tissue with a good blood supply left in position some distance from the recurrent laryngeal nerve will be readily accessible if a secondary operation is indicated.

Post-Operative Course.—Following parathyroidectomy for either type of hyperparathyroidism, metabolic changes are demonstrable in a few hours. The serum calcium falls extremely rapidly, as much as 4 to 5 mgm. in twelve hours. The phosphorus may fall slightly and is slow to rise to its normal value. The plasma phosphatase if elevated may take weeks or months to return to its usual normal level. A marked decrease in the excretion of calcium and phosphorus occurs very promptly (hours). Some patients have become practically anuric. The urinary excretion of calcium and phosphorus may occasionally remain subnormal for a period of months. Tetany may develop at as high a serum calcium level as 8 mgm. per 100 c.c. Any of the previosuly mentioned symptoms may appear. The treatment indicated has been fully discussed under hypoparathyroidism.

Following operation, the improvement in sympto-

matology is soon noted and at times is most dramatic. The bone pain may be one of the first symptoms to disappear despite the fact that increased radiability of the bones may be present for months. Recalcification of the skeleton in certain instances has required months. The bone tumors (osteoclastoma) gradually disappear, the bone cysts remaining. Thus, post-operatively, if a previously described lesion disappears, one can infer that it was a tumor, whereas, if it persists, it is likely that it was a cyst. I doubt if the calcium deposits in the kidney (nephrocalcinosis) are ever reabsorbed. The improvement in general health is so marked that patients frequently state that they have not felt so well in years. Thus, disappearance of all symptoms, whether referable to the skeleton, the hypercalcemia, or the increased excretions of calcium and phosphorus is to be noted and, as a general rule, very promptly. Naturally in the classical cases of Von Recklinghausen's disease, the marked skeletal deformities persist.

SUMMARY

Hyperparathyroidism is a distinct disease entity due either to adenoma of one or more of the parathyroid glands or to generalized hyperplasia of all the parathyroids. Although its clinical manifestations are varied, the calcium and phosphorus metabolism changes are characteristic. Following removal of the responsible hyperfunctioning parathyroid tissue, clinical improvement is most striking. The disease should be recognized sufficiently early to allow for complete restitution of the patient. If the disease is not arrested, it continues to progress, and the patient succumbs to one of the complications of a disease, the treatment for which is highly successful.

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VOMITING IN THE NEWBORN, WITH SPECIAL REFERENCE TO DUODENAL ATRESIA—REPORT OF TWO CASES.*

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Vomiting in the newborn is from either functional or organic causes. Functional vomiting is far more frequent, but often not much thought is given to the possibility of an organic cause until the child is exhausted from starvation and dehydration. In the young infant, the first vomiting should bring to mind the thought that the vomiting is the result of either a functional disturbance or an organic lesion and that an early differentiation of these causes is of extreme importance. If this were done, a diagnosis would more frequently be made before the baby becomes a poor operative risk or is in extremis.

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In functional vomiting the child does not appear sick. Vomiting may be the result of too large a quantity of milk at each feeding causing an overflow, or it may be caused by too frequent feedings. The most common cause of functional vomiting is an autonomic imbalance or spastic child. This condition can readily be controlled by atropine in a one to one-thousand solution given in one drop doses ten minutes before each feeding and increased one drop at each dose until the vomiting is controlled or the physiological effect of the drug obtained.

Vomiting caused by organic lesions presents a different picture. The child usually looks sick, is uncomfortable, the skin is wrinkled and dry, and

the face is pinched because of the loss of fluid. It has been said that the body can lose one-half of its proteins and still live, but if it loses one-tenth of its water it will die. So the infant shows very quickly the effect of the loss of water. Vomiting caused by an organic lesion is projectile in type and at times explosive. If the infant is watched after feeding, often it will be observed that the baby becomes restless, squirms about and then with an explosive suddenness vomits the whole feeding. Constipation is present, though here it is easy to be deceived. If the chart or the nurse's word is relied upon one will often be misled and both may report several stools a day without any reference to their character. The frequent bowel movements are often meconium stools and contain no milk. Weight loss is constant and usually rapid. Therefore, by contrasting the appearance of the child, the type of vomiting, the rapid loss of weight and the character of the stools, it may be determined whether the vomiting is functional or organic.

After the conclusion is reached that an organic lesion is responsible for the vomiting, it then becomes necessary to determine the kind of lesion that is responsible for the condition. A cerebral hemorrhage may cause vomiting, but the type of labor, the refusal of the child to nurse, the increased intra-cranial pressure and lumbar puncture will make the diagnosis. Imperforate anus or stricture of the rectum should be considered. A digital examination is all that is necessary to clear this up. The most frequent organic lesion that causes vomiting is congenital pyloric stenosis. It is necessary that this condition be differentiated from an atresia of the bowel, the most frequent site of which is in the duodenum. In both conditions, vomiting is similar in type, projectile, the weight loss is rapid and constipation is present. However, there are a few cardinal symptoms that will be helpful in differentiating the two.

In congenital pyloric stenosis vomiting comes on usually a week or two after birth. In atresia, the vomiting begins immediately, or within a day or two after birth. In pyloric stenosis, peristaltic waves are visible in the epigastrium. After a feeding, peristaltic waves can be seen to start at the pylorus and pass upward, diagonally, across the epigastrium toward the cardia. In atresia, intestinal peristalsis is visible below the epigastrium, and at times the waves have a step-ladder appearance. An X-ray examination is helpful in differentiating the two conditions. In stenosis the contrast medium, barium, is shown to remain in the stomach. In atresia the intestine is distended with gas above the point of obstruction. If the obstruction is not complete gas pockets may be seen scattered over the abdomen. Barium will then show the point of greatest obstruction. However, it is usually best not to give barium if atresia is suspected as it may increase the obstruction.

Dr. Sidney Farber, pathologist to the Children's Hospital at Harvard University, has worked out an ingenious test for atresia of the bowel. The test is dependent upon the embryological development of the child (Ladd, Wm. E.: Congenital Obstruction of the Small Intestine, *J. A. M. A.*, 101:1453-1457, November 4, 1934). "Prior to the fifth week of fetal life the intestine presents a well defined, round lumen lined with epithelium. Soon after this the epithelium rapidly proliferates, and the lumen of the intestine becomes obliterated by epithelial concrescence. The solid stage persists for a short time until vacuoles appear and coalesce to re-establish permanently, by the twelfth week of fetal life, the intestinal lumen. An arrest in development during this period results * * * in atresia of the intestine at one or more points * * * ."

Meconium begins to collect in the intestines after the twelfth week of fetal life. Meconium is made up of mucus, bile, keratinized epithelial cells, lanugo hairs and vernix caseosa swallowed with the amniotic fluid. Vernix caseosa and keratinized epithelial cells are not present in large quantities in the amniotic fluid until the last few months of pregnancy. Of these elements, keratinized epithelial cells are the easiest to detect. They may be detected in a "smear dried with ether, stained with Sterling's gentian violet for one minute and decolorized with acid alcohol. Failure to find these keratinized epithelial cells in the stools is an indication that one is dealing with a case of atresia."

Case 1.—A baby girl, born six weeks premature, vomited all food and water from birth. She was treated by one of us (Falkener). The patient showed symptoms of obstruction of the duodenum, which was confirmed by X-ray examination. The patient was operated upon (by Horsley) on September 20, 1932, at the age of six days. The opera-

tion was a posterior gastro-enterostomy. The child's condition was quite desperate. The operation was done with local anesthesia and a sugar rag. Ringer's solution had been given by hypodermoclysis before operation. After the operation more Ringer's solution was given by hypodermoclysis and by proctoclysis. The baby died of shock about four hours after the operation. Post-mortem examination showed that the pylorus was greately dilated, as was the proximal duodenum. On further exploration the duodenum was seen to end in a cul-de-sac with no opening in its distal end. The jejunum began in a pouch, and there was no connection between the termination of the duodenum and the beginning of the jejunum.

Case 2.—The baby was a boy, born May 1, 1934, and weighed 5 pounds and 6 ounces at birth. Seven and one-half hours after birth the baby was put to breast, but refused to nurse. He vomited a large amount of dark brown fluid. He was treated by one of us (Walker). At 10 P. M. the baby nursed fairly well, but vomited the 2 A. M. nursing. The vomiting continued, projectile in type. On the second day artopine 1:1000 in one drop doses was given, and increased to five drops without results. There were two to four small mucous stools daily. On the fourth day an X-ray examination showed small gas pockets over the abdomen. He was operated upon (by Horsley) at the age of five days. The condition appeared similar to that in the first case, only not quite so far advanced. The pylorus and upper duodenum were widely dilated and there was an obstruction in the duodenum rather low down because the child would vomit bile. On account of the condition of the baby no extensive exploration was made. A gastro-enterostomy was done under ether anesthesia. After the operation salt solution was given by hypodermoclysis, and 1 per cent dextrose in normal saline solution was given by proctoclysis. The patient made a satisfactory recovery. He is now, October, 1934, five months old, is doing well, and weighs 14 pounds and 2 ounces.

COMMENT

Congenital duodenal atresia has not received the attention it deserves. The diagnosis has been discussed, and the importance of differentiating as soon as possible functional early vomiting of an infant from vomiting caused by an organic lesion has been emphasized. It seems highly probable that in the State of Virginia many of these infants that might be saved by prompt diagnosis and proper treatment are perishing. If in the experience of ourselves (two pediatricians and one surgeon), there have occurred within a period of two years two cases of congenital duodenal atresia, there must be many more cases of this kind scattered throughout the country.

Too frequently is a diagnosis made either of a functional condition or of improper feeding, and different feeding formulae are tried and various drugs administered until the baby dies. Then the death is ascribed to some form of asthenia or a similar vague disturbance. A necropsy is seldom done. Babies as well as adults usually die of very real things, and rarely of functional disturbances. If physicians who attend babies will bear in mind the gravity of the symptom of early vomiting, and will not be content until the cause of the vomiting has been definitely ascertained and proper treatment instituted, many babies that now die within the first few days of their lives, with vomiting as a chief symptom, can be saved.

TREATMENT

The treatment of congenital duodenal atresia is obviously surgical. The operation should usually be a gastro-enterostomy.

A gastro-enterostomy in these infants is quite different from that done in an adult. It must be performed on an infant under ten days or two weeks old, because in complete duodenal atresia the little patients would probably not live longer, even with hypodermoclysis and the rectal administration of salines and water. The jejunum is small and contracted, no larger than a quill. The transverse mesocolon is veil-like and transparent. It is not necessary to incise the transverse mesocolon, but it may be included in the suture.

Fine silk in a small curved needle is the best suture material for these cases. Two tractor sutures are placed between the loop of jejunum that it is proposed to unite to the stomach, and the posterior wall of the stomach, and are clamped and held taut. In very young infants the contents of the stomach and upper small intestines are practically sterile, but a small moist gauze pack should be placed around the site of operation.

On account of the small size of the intestines, too

much suturing is undesirable, so, instead of inserting a preliminary continuous suture between the jejunum and stomach before incising the stomach and jejunum, the incision is first made, and a row of silk sutures placed as a continuous lockstitch and drawn snugly is the only suture used posteriorly. This line of sutures, accurately placed, is safe. When it is brought anteriorly, however, there is some difficulty in making as smooth a union as in the posterior wound, so an additional row of sutures is inserted anteriorly, and this may be reinforced by a few interrupted mattress sutures of fine silk.

Because of the active peristalsis of the stomach and intestines, and the possibility of rapid absorption of catgut, together with the fact that the danger of the use of silk in the stomach is generally much over-rated, silk or linen is always used in these cases.

It is highly important that there be no obstruction to the afferent or efferent loop. The lumen of the bowel is so small that an obstruction could easily occur. Using only one row of sutures posteriorly lessens such a possibility. (Horsley, J. Shelton: Surgery of the Stomach and Duodenum, C. V. Mosby Co., St. Louis, 1931).

Conclusion

Congenital duodenal atresia is probably far more common than it appears to be. Doubtless many cases of early vomiting in infants are from this cause, and unless the condition is recognized in the first few days of life and operation done promptly, death is inevitable. The recognition of this state of affairs by pediatricians and general practitioners who treat infants will greatly aid in lowering the mortality of early infancy.

Discussion

Dr. J. Shelton Horsley, Richmond: I am glad to have the experience of being associated, as co-author, with these two gentlemen. Our experience with atresia is interesting. As Dr. Walker says, if three of us in two years have found two cases of congenital duodenal atresia, it is extremely probable that there is a great deal of it unrecognized. As he says, these babies are treated for vague disorders; they die, and usually no necropsy is made, and the death is put down as from asthenia or something else. Doubtless in the State of Virginia there are many, many babies dying of this same condition that is not recognized.

In regard to the technical part of the operation, it is quite different from that in an adult. It is described in the paper.

I want to commend the splendid work in the diagnosis of these two cases by Dr. Walker and Dr. Falkener. Both cases came to me diagnosed as congenital duodenal atresia, and they proved to be just that. Dr. Walker has given us the findings on which the diagnosis was made, and the first symptoms. A surgical operation, usually gastro-eneterostomy, is the only treatment.

Dr. Walker, closing the discussion: We should keep in mind the necessity of making a differential diagnosis when the newborn baby vomits persistently. We are inclined to think that vomiting in the newborn baby is a simple matter. Usually it is, but not always.

We are only aroused when the baby becomes starved and dehydrated. When this occurs the chances of recovery are lessened when surgery has to be resorted to.

After it has been decided that an organic lesion is present, it is necessary to go further and attempt to decide what type of lesion is present—pyloric stenosis or atresia of the bowel.

This differentiation will help the surgeon to outline his operative procedure.

The differentiation can usually be made by comparing the above facts.

THE IRRITABLE COLON—A COMMON CONDITION, COMMONLY MISUNDERSTOOD.*

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Chronic or recurrent irritability of the large bowel is a cause of symptoms in at least 40 per cent of the individuals consulting a gastroenterologist. It may be due to organic disease, is not infrequent in persons who take purgative medicines regularly or to excess, but often is of purely neurogenic origin. The last type is so frequently misunderstood in that it is treated as on organic dis-

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ease, that I feel justified in discussing it. It has been described by a number of authors under the names unstable colon, spastic colon, mucous colopathy, colitis and mucous colitis.

In order to appreciate the condition, it is necessary to recall something of the physiology of the colon. The right half of this organ has some digestive function, largely through bacterial agencies and a definite absorptive power especially for water; the left half is probably largely a storage tank which normally empties itself at regular intervals, usually, but by no means always, every twenty-four hours. It is important for the profession to remember and to pass on to the laity the fact that the colon is not a cesspool, in spite of the fact that only the left half at most empties when a normal stool is passed, and that the material in the right half is then prepared for a subsequent stool.

This colonic function is the result of a well coordinated nervous and muscular activity leading to peristalsis and anti-peristalsis in orderly fashion. Various factors can easily upset this mechanism, the simplest of which is a purgative. This acts as an irritant which leads to complete evacuation of the bowel. It is readily seen that repeated purgation will cause chronic irritation of the colon with mucus formation, spasm and so-called peristaltic unrest. Purgation is then a common cause of irritable colon.

This irritability may be induced by infectious diseases of the colon, by new growths, by polyps and diverticuli and a number of other conditions. In this paper, however, we are primarily interested in those cases where the condition is of neurogenic origin. It is seen most commonly in those individuals of vagotonic type who live under nervous stress and strain as a result of their work, their domestic and social worries or other things which tend to upset their nervous economy. They cannot relax generally and their colons share in this tension. They become constipated as a result, or, as is not infrequently the case, the constipation alternates with diarrhea. They take purgatives or enemas to empty the colon, and consume roughage, such as bran, to increase the intestinal bulk. These measures initiate a vicious circle which may go on indefinitely and often requires the utmost skill on the part of the physician to break.

A small percentage of these patients may have definite allergic sensitiveness to certain foods which may be the cause of colonic irritability, but skin protein tests are usually quite disappointing and the elimination diets must be tried to determine the offending food.

Vitamin deficiency and a disturbance of calcium metabolism have been suggested as causes of the condition but neither of these has appeared to be important in the etiology. Chronic inflammation of the appendix, the gall-bladder or the pelvic adnexa have been thought to reflexly disturb the nervous mechanism of the colon in certain cases, but it is rare that operation for such organic diseases does more than bring about temporary relief of the symptoms.

Constipation is probably the most common complaint with this disorder. It may alternate with diarrhea and may be associated with a sensation that the bowel does not empty itself after a stool. Not infrequently, especially in women, evacuation of the bowel is followed by a feeling of general weakness and depression. Colicky pain along the course of the colon is a common complaint. It may be mistaken for that arising from organic disease, but is usually more diffuse and the patient's description of it is apt to be vague. The pain is almost invariably increased by purgatives or enemas.

When the individual is constipated, the stool when observed is small and in hard, round segments; it is passed with difficulty and usually with strings of tough mucus. On several occasions I have had patients bring these strings to me insisting that they were portions of tapeworms. Actual mucous casts of sections of the bowel may at times be passed. During other periods the individual may have frequent desire to defecate with the passage of small fecal content and jelly-like masses of mucus. Purulent material is never passed in the neurogenic cases and blood is rarely seen in the stools unless there are local bleeding areas about the rectum or anus.

The general evidence of disturbance of the nervous system is striking in the majority of the cases. Many present the picture of an anxiety neurosis; they have cardiac irregularities; vasomotor disturbances, such as faintness, numbness in the extremities, clammy perspiration; and not uncommonly arthritic manifestations are present. In advanced cases their minds seem to "revolve about their belly buttons." I recently saw in a neurotic negro man the remarkable ability to induce excessive peristalsis

with loud coloptage purely voluntarily on his part. These individuals develop many false ideas about themselves, their diets and the terrible consequences if the bowel is not emptied daily.

A complete medical and environmental history should be taken in each case as this is extremely important. Physical examination will reveal the neurotic, often visceroptotic type of individual in whom the spastic, sensitive left half of the colon is palpable. Proctoscopic examination of the accessible colon often shows spasm of the lower sigmoid, some engorgement of the mucosa and excessive mucus secretion, but is especially valuable in ruling out organic disease. Examination of the stool microscopically is helpful to eliminate the possibility of parasitic infections. Careful Roentgen ray examination is of particular help and may include a barium enema as well as a barium meal. Of the two, more accurate information can usaully be obtained from the latter. The findings may vary all the way from slight spasticity of a portion of the colon to almost complete obliteration of a section of the bowel giving the "string" shadow. Not infrequently dilatation of the proximal colon with spasticity of the distal may be found.

In the treatment of irritable colon the two important principles are: First, a thorough understanding of the underlying etiology on the part of the patient, and the outlining of a therapeutic regime which will allay the irritation present and prevent, if possible, its recurrence in the future. Sufficient time should be taken in conference with the patient to give him a general understanding of normal bowel physiology, an insight into his own nervous make-up, and the importance of extraneous nervous excitements which enter into his daily life. He should be made to comprehend the necessity of avoiding irritant purgatives and irrigations, and his mental processes should be steered away from his "belly button." Time spent in this psychotherapy will accomplish a great deal more, especially for the future, than any dietary or medical program prescribed.

These patients are very apprehensive about themselves and it is important to avoid using medical terms which to them suggest organic disease. I have seen a number of them who have been told that they had "colitis." To them, this means inflammation of the bowel, and it has been particularly difficult to convince them that their symptoms were purely of nervous origin. Many of them are tall and slender and naturally have low-lying abdominal viscera, but to give them a diagnosis of visceroptosis usually aggravates their "belly consciousness."

The diet to be ordered is of the low residue type. The essential point is the avoidance of coarse foods containing fiber, skins, seeds or gristle. The patient must omit salads, celery, tomatoes, cucumbers and pineapple. Many of the green vegetables contain too much undigestible cellulose, as do raw fruits, such as organges or grapefruit. Such things as raisins, nuts and jams full of seeds should not be allowed. Meats may be eaten freely provided they are tender and well cooked. At times a definite hyperacidity syndrome of grastric symptoms is present which will be benefited by food, such as milk, between meals and at bedtime, and the avoidance of acids, highly seasoned foods and excessive sweets. All drinks containing caffein should be omitted and tobacco smoking should be cut to a minimum. The use of "tonics" containing strychnine and nux vomica is illogical and practically always aggravates the symptoms. Bran, either plain or in cereal or bread, should be absolutely interdicted. If a definite food allergy is discovered, the proper deletions from the diet may be made, but it is important that the patient follow the doctor's instructions as to diet and not one of the numerous quasi-medical lists which are so readily obtainable.

Opinion is somewhat divided as to the value of the anti-spasmodics but in my opinion belladonna in moderate dosage is helpful. Some of the newer, and incidentally more expensive, anti-spasmodics have not proved as effective. Frequently general sedation is desirable. This may be accomplished with proper dosage of bromides or one of the barbiturates. A few days of rest in bed or a short vacation may be quite helpful in the beginning of treatment.

For the constipation, it is surprising how often relaxation and giving the bowel a chance to function normally will correct the condition. Mineral oil alone or in combination with agar-agar (with no added laxative) should be taken in regular dosage. In the early stages it may be necessary to employ minimum and decreasing doses of cascara to establish evacuation, always trying to avoid the passage of a loose stool.

In recent years several articles have appeared in

the literature advocating the use of autogenous vaccines made from the stools in the treatment of these patients. I have not used these but have seen two patients who had taken numerous injections with absolutely no relief of symptoms which could be attributed to the treatment. If my premise is correct, this treatment should at least have a bad psychological effect since in the minds of the laity vaccines are used for the cure of infections.

Colonic irrigations of any kind should be studiously avoided and if an enema seems necessary either normal saline solution or warm oil should be used. I join the proctologists in deploring the too frequent use of soapsuds or other irritant enemas. Local irritant conditions about the anus should be corrected by the proper surgical measures but I warn you that disappointment is in store for those of you who promise relief of the colon symptoms by removal of a chronically diseased appendix or gall-bladder.

From my own experience and that of others, this type of colon disturbance does not seem to predispose to the development of chronic ulcerative colitis, nor are these subjects any more likely to have malignancy of the colon than do the average individuals. It is rather surprising how often elderly people are seen with a long history of colon symptoms.

In conclusion, I wish to emphasize that with proper care in the study of the patient a positive diagnosis of neurogenic irritability of the colon can be made, and if the appropriate therapeutic procedures are employed these chronic sufferers can be made infinitely more comfortable. That an absolute cure cannot be promised in all cases is obvious. Their inherited unstable nervous make-up cannot be replaced nor can we eliminate all of the unfavorable nervous influences, but a good deal can be done toward making the patients live in harmony with themselves and their environment.

Professional Building.

DISCUSSION

DR. OSCAR L. HITE, Richmond: I think Dr. Davis has brought us today a very practical and helpful paper, one extremely helpful, I think, to those physicians practicing in the country, as well as to the men in the cities. There is nothing new that I might add to what he has said. The only thing I could hope to do would be to emphasize some of the points which he has talked about already.

The condition is more frequently found in the female than in the male, being estimated by different men to be about three to two—or some men say as high as three females to one male.

Now, I might say a word about the diagnosis. Dr. Davis made mention of the method of giving a barium enema as well as a barium meal. I think a barium enema is of very little help, because usually it is put in under some pressure and the colon, unless there is a great amount of spasm, is outlined very well on the X-ray film. On the other hand, if a barium meal is taken and allowed to go into the colon in normal fashion, you will find the erea of spasm outlined.

Another thing; if you question the patients about the character of their stools, they will tell you about the ball-like appearance, hard knots, lump-like in character. Dr. Davis spoke of the great amount of mucus these patients pass. About a year ago a patient of mine who was down at the beach called me over long distance and said he had passed a piece of his bowel and said he was going to send it to me. He sent it, special delivery. When it came to me the next day it did smell like a piece of his bowel. It was put in water and it became sponge like in appearance. When it was teased with applicator, it was mucus. This particular patient has a diverticulitis and has a good deal of pain on his left side and also has colitis.

As to treatment, I find the majority of these cases coming to me have been given no instruction whatever as to habits and little as to diet. Now, the majority of these people respond to every impulse they have for evacuation of the bowel. Doctors, as a rule, do not instruct them as to their habits, and they are no more than animals; they respond to every impulse of the bowels to move. If these people are instructed to try to resist some of these impulses and try to have only one movement of the bowels a day, they get along beautifully.

I have found tannin agar to be helpful in this type of case. It was devised by Dr. Max Einhorn, with whom I was associated. It is impregnated with a grain of tannic acid to the dram, I believe. He has used it over a period of years and it has proven beneficial in cases with frequent stools.

DR. J. W. HUNTER, Norfolk: I should like to ask Dr. Davis whether he has had any experience with barium sulphate, using it twice a day?

DR. BEVERLEY R. TUCKER, Richmond: I think there is a very similar condition to the one that Dr. Davis so excellently discussed, and I should like to ask Dr. Davis to let us know what he thinks about it, when he answers this discussion. That is, a good many people, I find, have a somatic delusion about their bowels, and, although their bowels are perfectly normal, while that delusion is on, they can get up a diarrhea or a constipation. I know a woman who came in with a disability of her arm. We congratulated ourselves upon getting the arm well, and then she developed a colitis, so to speak. We treated her for that and got that all

right. Then she developed a nervous condition, and every time an automobile came within twelve blocks she would nearly jump out of bed. We treated her, and that got all right, and then she could not see. We remedied that, and then she got back on the bowel. (Laughter.)

DR. DAVIS, closing discussion: Dr. Hite brought out one point which I think should be stressed. If my premise is correct in regard to these cases, the general practitioner is the man to handle them, because he is in the position where he can discover the underlying nervous stresses and strains. The patients are not so apt to go into these with a strange doctor whom they only see for a few hours. On the other hand, a thorough diagnostic study will often correct some of their misinterpretations and put them in better position for the family practitioner to guide them to health.

I have used barium sulphate in some of these patients, and occasionally it works very well as a soothing agent. A difficulty, however, is that it tends to cause fecal impactions.

Dr. Tucker knows a great deal more about somatic delusions than I do. His patient is exhibiting symptoms suggesting organic disease probably as an outlet for some severe psychic shock. I am sure Dr. Tucker has discovered the background for this.

DR. TUCKER: Her sweetheart died. (Laughter.)

DR. DAVIS: It seems to me, then, that the thing for Dr. Tucker to do is to find her another sweetheart. (Laughter.)

STRIPS OF FASCIA LATA AS SUTURE MATERIAL IN THE REPAIR OF THE MORE DIFFICULT ABDOMINAL HERNIAS.*

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For practical purposes abdominal hernias may be divided into two groups: (1) those of simple type, in which a very high percentage of cures follows operative treatment, and (2) the group in which satisfactory results are not obtained by the ordinary forms of treatment. For some years I have been especially interested in this latter group, and I am satisfied that, after an extensive trial of living sutures taken from the fascia lata, better results can be obtained than with any other technic.

The greatest objection to the method in the past has been the necessity of making a long incision on the outer aspect of the thigh and the extra time added to the operation. I am now able to obtain all the tissue necessary through an incision not more than 2 inches (5 cm.) in length, with its central point directly over the lower end of the tensor fasciae femoris muscle, by the use of a fascia stripper (Fig. 1). This stripper is made of two steel tubes, one of which is slightly longer than the other, has a handle at one end and an opening close to the other, and fits inside the other tube. This outer tube has a cutting edge at its lower end. After freeing up, through the small incision on the upper outer aspect of the thigh, a piece of fascia sufficiently wide to make as many sutures as I expect will be necessary for repair of the hernia, it is inserted through the opening in the end of the stripper; by careful manipulation this strip can be freed down to the insertion just above the knee. The cutting end of the outer tube is used to cut the strip free. The tissue thus obtained can be divided into as many strips as necessary by simply tearing it in a longitudinal direction, as it splits very readily but is exceedingly strong on a straight pull. Experimental work done by Gallie and LeMesurier more than ten years ago definitely proved that such strips live unchanged when buried in the tissues in such a way as to receive an adequate supply of lymph. They also were able to prove that such strips neither contracted nor stretched and became firmly adherent to all tissue through which they passed. Each strip is threaded on a thick, short, curved needle and tied to it to prevent frequent rethreading. The other end of the fascial strip is tied firmly with silk or chromic catgut and, after making one or two stitches into the tissue close to the hernial opening, the needle is carried through the suture, close to the ligated end, to form a slip-knot and firmly anchor the suture (Fig. 2).

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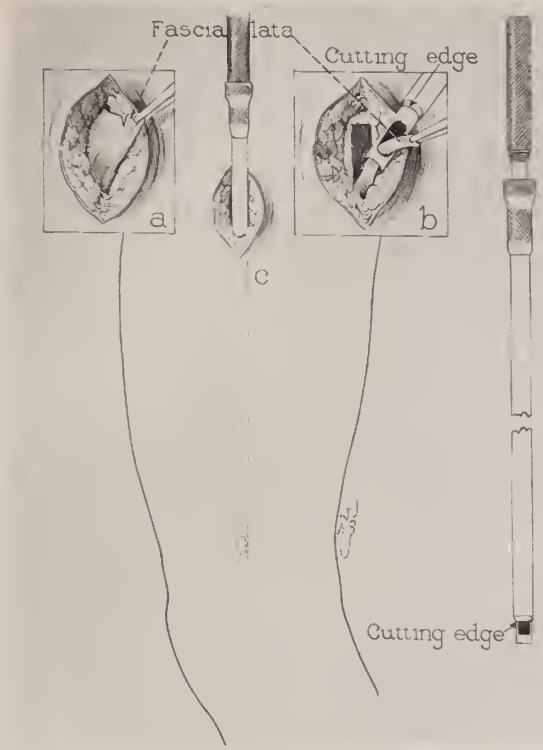

Fig. 1.—Instrument for obtaining fascia lata in use.

In inguinal and other smaller hernial openings, no other suture material is used; in the larger post-operative and umbilical hernias, however, I first like

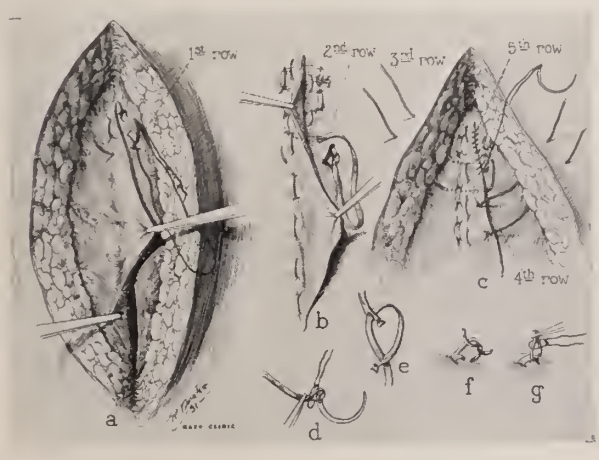

Fig. 2.—Technic of using fascia lata in repair of post-operative and umbilical hernias. a, plastic over-lapping of full thickness of scar tissue and insertion of first row of catgut; b, reinforcing, using living sutures taken from fascia lata; c, further reinforcing with another row of catgut and silkworm gut sutures; d, tying sutures to prevent frequent slipping from eye of needle; e, method of joining one suture to another; f and g, satisfactory method of ending suture.

to close the opening by carrying one side beneath the other and fixing it there with a single strand of chromic catgut simply because it is easier to work with (Fig. 3). The closure is completed by reinforcing with running mattress sutures of living tissue and, if advisable, reinforcing with other living sutures running at right angles to this first row in much the same way that yarn is used in darning a hole in a sock. The other side of the hernial opening is now imbricated on top of the darned area and firmly fixed with other living sutures. By this method, I am sure we are able to effect cures that were not possible with any foreign suture material. Any good anesthetic agent is satisfactory, although I believe spinal anesthesia of special advantage in most cases on account of the complete relaxation, with the resulting minimal amount of trauma to the protruding bowel. In large hernias this is of great importance, as the tension within the abdomen is definitely increased after the closure.

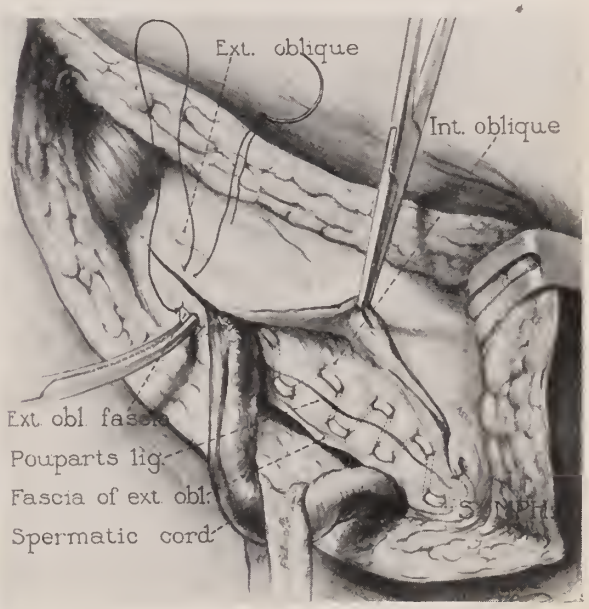

Fig. 3.—Living sutures taken from edge of external oblique muscle. If this is not satisfactory, strips of fascia lata can be used.

In cases in which there has been extensive dissection in the subcutaneous tissue, it is advisable to obliterate the space as much as possible, by either silkworm gut or catgut sutures, and to provide drainage by a large tube for forty-eight or seventy-two hours. The use of a Scultetus bandage is advisable until the patient is allowed out of bed, which, as a rule, is in about three weeks; a well-fitting abdominal binder should then be worn when the patient is up, especially if he is obese.

Most of the large hernias are in cases in which the patient is over-weight, and the question always

comes up as to the advisability of reducing the weight before advising surgery. If the patient lives close by and is having comparatively little trouble, and there are no dangerous symptoms from the hernia, a slow reduction in weight and the wearing of a satisfactory truss of some type is probably advisable, but my experience with attempts at reduction at home have not been satisfactory. Unless 50 to 100 pounds (22.7 to 45.4 kg.) can be taken off, it is of little help, and such reduction should be accomplished in several months or a year. Rapid reduction, or reduction away from home is not satisfactory. With the first method the patient's strength and resistance are markedly reduced, and by the second method the patient is put to considerable extra expense. By using spinal anesthesia and living sutures, I now feel that all patients who are fair surgical risks can safely be operated on with little delay in pre-operative preparation and with a good prospect for cure.

In cases in which it is necessary to remove a wide strip of fascia lata, the possibility of a muscle hernia developing has to be considered. This is not a serious objection to the method, however, as such a hernia does not interfere with normal function and, as a rule, is absolutely symptomless; it is never necessary to repair it. Furthermore, for all but the extremely large hernias, enough fascia lata can be removed without hernia developing. As a protection against dissatisfaction later, all patients should be advised of the possibility of a bulging on the side of the thigh before doing this type of surgery.

SUMMARY

By the use of strips of fascia lata as suture material for the more difficult types of hernia, better results can be obtained than by any other technic. By the use of a fascia stripper, satisfactory tissue can be obtained rapidly and with no inconvenience to the patient. Gallie's and LeMesurier's technic in using fascia has proved satisfactory.

For the larger hernias, a modified plastic overlapping, reinforced with sutures made from fascia lata, has given good results. For obese patients, slow reduction in weight is advisable but seldom necessary.

Spinal anesthesia is of advantage to both surgeon and patient.

There is a little danger of a muscle hernia developing where the fascia has been removed, but this is no contraindication to the operation.

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LEIOMYOMA OF THE GASTRO-INTESTINAL TRACT—A REPORT OF TWO CASES.*

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Although leiomyoma has long been regarded as an important tumor of the uterus, as a gastro-intestinal tumor it has failed to receive the consideration which it merits. By many authorities it has been looked upon as a pathologic curiosity of little importance. In the past twelve or fifteen years, however, the number of reviews of the subject and frequent case reports which have appeared in the medical literature have opened our eyes to the fact that leiomyoma of the gastro-intestinal tract is not such a rarity, and that it may be of grave pathologic and clinical importance.

The following cases have come under the care of Dr. R. L. Payne and myself in the past two years:

Case 1.—Mr. E. S., age fifty-eight, was admitted to the Norfolk Protestant Hospital on July 18, 1932, complaining of a gastro-intestinal upset of one week's duration. On questioning him it was learned that he had experienced a similar attack one year previously, at which time he suffered severely with epigastric pain, nausea, distention and diarrhoea. During this attack he had five or six loose stools a

*Read before the sixty-fifth annual meeting of the Medical Society of Virginia, at Alexandria, October 9-11, 1934.

day and often passed blood and mucus. After five or six days the attacks subsided and he enjoyed good health for a period of nine months. Following this he had a second attack which again cleared up spontaneously after four or five days.

Just prior to his admission to the hospital he consulted a clinician because of a third recurrence. At this time he was having four or five stools a day but was not passing blood or mucus. He had lost about fifteen pounds. The cardiac, respiratory and genito-urinary history was essentially negative.

His past medical history was significant in that he had had two previous operations. An appendectomy had been performed fourteen years previously, and four years later Dr. Payne had performed a cholecystectomy and posterior gastro-enterostomy for cholecystitis and duodenal ulcer. Following this operation he had remained well until the onset of the present illness.

Physical examination revealed a well-developed, well-nourished, white male who appeared to be about fifty years of age. Examination of the head, neck and thorax was essentially negative. On the abdomen were two scars—a McBurney and a right rectus scar. There was no distention or rigidity. The patient complained of slight discomfort on deep palpation over the mid-epigastrium, and an indefinite mass was elicited in the same region. Rectal examination was negative except for bleeding hemorrhoids. The extremities were negative.

The blood Wassermann and urinalysis were negative. The red blood count was 4,510,000 and the hemoglobin was 86 per cent. There was a leucocytosis of 10,200, with 67 per cent polymorphonuclear leucocytes. Gastric analysis showed a total absence of free hydrochloric acid. The roentgenologic examination revealed a filling defect on the lesser curvature of the stomach near the pylorus. Though the roentgenologic findings were not typical of a malignancy, a clinical diagnosis of carcinoma of the stomach was made.

On July 20, 1932, an exploratory operation was performed. The duodenum was found to be bound down and distorted by dense adhesions. After freeing these adhesions, a discrete incapsulated tumor about the size of an English walnut was found on the lesser curvature of the stomach near the pylorus. The mass was movable and extended into the gastro-hepatic omentum. While it encroached upon the stomach wall it did not appear to involve the mucosa. The tumor was excised and the defect in the stomach wall closed with a double row of chromic catgut sutures.

Grossly, the tumor was firm and incapsulated. It was nodular and the cut surface was of a pinkish gray color, and moist. It measured about 38x28x28 mm.

Microscopic section proved that the tumor consisted of irregular bundles of smooth muscle fibres, with a very scanty supporting structure of fibrous tissue and blood vessels. In most areas the tumor was quite cellular and the muscle cells were rather poorly developed. Though the nuclei were rod-shaped, with rounded ends, they were larger than normal and stained quite deeply. Only two mitotic figures were found.

The pathologic diagnosis was benign leiomyoma of the stomach. The patient's post-operative convalescence was uneventful, and on the sixteenth post-operative day he was dismissed from the hospital as cured. To date he is still in good health.

Case 2.—Mrs. M. G., age twenty-eight, was admitted to the Norfolk Protestant Hospital on May 8, 1933, because of intermittent attacks of severe right abdominal pain. She had observed a small abdominal tumor which sometimes appeared in the right lower quadrant, though on other occasions it might be located in the mid-epigastrium. The first attack of pain had occurred about five months prior to her admission. Since the onset the attacks had been frequent, sudden in onset, and of various degrees of intensity. They were characterized by abdominal cramps, moderate distention, nausea and occasional vomiting. There was no history of diarrhoea or constipation and the patient had never observed any blood or mucus in her stools. Diet apparently had no effect. The attacks usually subsided spontaneously but she was never entirely free from abdominal discomfort.

Her cardiac, respiratory, genito-urinary and menstrual history was of no significance. During the five months of her illness she had lost twenty pounds of weight.

Upon examination the patient appeared to be well-nourished and well-developed. Her pulse, temperature and blood pressure were normal. Examination of the head, neck and thorax was essentially negative. The abdomen was soft and not distended. A freely movable mass about the size of a small lemon was palpated in the right lower quadrant. Exami-

nation of the pelvis and extremities was negative. The blood Wassermann and urinalysis were negative, and red and white blood counts were normal. No stool examination or roentgenologic investigations were made.

Because of the movability of the tumor, the absence of any change in bowel habit, and the fact that the patient did not appear to be ill, the intestine was not seriously considered as the source of trouble and a diagnosis was made of intra-abdominal tumor, probably in the omentum.

On May 9, 1933, an exploratory laparotomy was performed. Upon opening the abdomen the tumor was found to be within the lumen of the transverse colon, and immediately behind it was an intussusception involving a freely movable caecum and the terminal portion of the ileum. Obstruction was not complete. By making pressure distal to the tumor, the intussusception was readily reduced and the growth was found to be attached by a pedicle to the caecum just above the ileo-caecal valve. Fortunately the patient had been on a liquid diet for several days and the bowel was practically empty. An incision was made through the longitudinal band of the caecum through which the tumor was exposed. The pedicle was clamped and sutured and the tumor excised. The opening in the caecum was closed by a double row of chromic catgut and the abdomen closed without drains.

For four days following the operation the patient was given nothing by mouth, her nourishment and fluid balance being maintained by intravenous administration of glucose and saline. On the second postoperative day the patient had a severe chill following intravenous glucose, but otherwise her convalescence was uneventful.

Grossly, the tumor appeared about the size of a golf ball, measuring 45x40x35 mm. It was attached to a broad pedicle and was covered with mucous membrane. About half of the mucous membrane was ulcerated. The mass was firm and the cut surface appeared translucent. The microscopic picture was that of a typical leiomyoma. There were irregular bands of smooth muscle fibers supported by connective tissue and blood vessels. The nuclei were rod-shaped, rounded at the ends, and stained deeply. There were no mitotic figures. The tumor was diagnosed as benign leiomyoma of the caecum.

DISCUSSION

Leiomyoma is a neoplasm composed of smooth muscle with a supporting structure of connecting tissue and blood vessels. It is most frequently encountered in the uterus, but may develop in any location where pre-existing smooth muscle is found. While its occurrence in the gastro-intestinal tract has been generally considered rare, the lesion has been often observed in the esophagus, the stomach, the small and large intestines and the rectum, and recent investigations have led to the conclusion it is by no means uncommon.

In 1928 Rieniets made an extensive search, by inspection and palpation, of all stomachs secured at the first 100 consecutive postmortem examinations performed at the Mayo Clinic. From this group he found sixteen stomachs which contained twenty-one tumors that proved to be leiomyomata. Most of them were quite small and ranged from 1/2 to 9/10 cm. in diameter. Because of the unusual frequency of these tumors he ran a second group composed of the next 100 stomachs examined at necropsy and in this group found twenty-two leiomyomata in sixteen stomachs. He then studied all available leiomyomata which had been discovered at routine autopsy examinations from January 1, 1922, to April 1, 1930, exclusive of the cases mentioned above. In this group he found only thirty stomachs presenting thirty-four leiomyomata. The lesions in the group were much larger than the others, ranging from 1/10 to 3 or 4 cm. in various diameters.

Balfour interprets Rieniets' observations as meaning, first, that leiomyomata of the stomach are much more common than the surgeon has considered them in the past, and, second, that in the majority of cases such tumors undergo little if any change in the course of the average patient's life, and therefore go unobserved.

The etiology of leiomyoma is unknown. A number of theories have been advanced, but as yet all remain to be proved. It is derived undoubtedly from smooth muscle, but we do not know the exciting factor which is required to stimulate these isolated groups of cells to proliferation and tumor formation. In the gastro-intestinal tract the stomach is the most common site and males are apparently affected more often than females.

In size, leiomyomata may range from small shot-like nodules, as described by Rieniets, to growths

of quite large proportions. Raiford refers to a myoma of the small intestine the size of a grapefruit or a baby's head. They are usually single but may be multiple, especially in the stomach.

The typical tumor is firm, although the consistency may vary somewhat in proportion to relative amount of muscle and fibrous tissue. The cut surface is pinkish-gray in color and more opaque than normal muscle. It usually appears to be sharply circumscribed and may shell readily out of its bed. It must be remembered that these tumors are particularly subject to regressive changes, and the color and density are naturally altered where hemorrhage, fatty, or hyalin degeneration, necrosis or calcification, have occurred.

The microscopic picture of leiomyoma presents intertwining bundles of smooth muscle supported by varying amounts of stroma which is composed of fibrous tissue and blood vessels. The smooth muscle, however, always predominates. The tumor cells are usually shorter and thicker than the cells of normal muscle, the cytoplasm tends to be less acidophilic, and the nuclei, though rod-shaped with rounded ends, may be larger than normal and richer in chromatin. In the more actively growing tumors there is an increase in the neoplastic character of the cells. They are less well differentiated, may be quite large, and in definitely malignant leiomyomata the muscle cells may closely resemble spindle cells. In this type the connective tissue stroma is very scant, large giant cells are formed, and mitotic figures are usually abundant.

While leiomyomata are usually benign, a certain percentage are malignant. Here, again, arises the old question. Are a certain per cent of these tumors malignant from their beginning, or do benign leiomyomata sometimes develop malignant characteristics? According to Ewing, Delfield and Pruden, and McCallum, either may be the case. Ewing states, "From the uterus, stomach, esophagus and intestines this usually benign tumor has developed extensive local and secondary growths and proved fatal. This event has occurred in the later period of the growth or after extirpation of tumors which had long remained benign, so that it would appear that a malignant change has taken place in the character of the tumor." There are also reports of cases of the type reported by Melneck, where apparently benign leiomyomata have given rise to metastatic lesions, and both original and metastatic lesions failed to present the necessary criteria for a pathologic diagnosis of malignancy. Ewing states, however, that he has never seen a case of this type where careful study failed to reveal some divergence from the characteristic picture of benign leiomyoma.

Occasionally the differential diagnosis is difficult since a rapidly growing malignant leiomyoma may closely resemble a spindle cell sarcoma or cellular fibroma. It is the type which is so frequently diagnosed leiomyo-sarcoma—a very confusing terminology. It is conceivable that the fibrous tissue cells of the stroma may be stimulated to the degree of producing an abnormal new growth, but in this event the fibroblasts would predominate rather than the muscle cells, and the tumor would be classed as a sarcoma. The following criteria are often helpful in differentiating the one from the other: Muscle cells are usually sharply outlined and have rod-shaped nuclei with rounded ends which lie within the cell bodies. The nuclei of fibroblasts are definitely spindle shaped, shorter, and lie on the surface of the cell. Muscle does not show the definite wavy striation characteristic of connective tissue, and is apt to contain more nuclei in a given field. Muscle cells usually terminate in a definitely pointed extremity, while the tip of the fibroblast is apt to break up into an arborization of fine fibriles. Finally, the staining properties of the cell may be of considerable aid. Muscle is more strongly acidophilic than connective tissue, and therefore takes a more intense red color in sections stained with eosin; Van Guson's stain shows muscle yellow, connective tissue red. Mallory's stain shows muscle red and connective tissue blue.

Gastro-intestinal leiomyoma may be intra-luminary or extra-luminary, depending chiefly upon the layer of muscle from which they are derived. For example, a tumor arising from the muscularis mucosa would more than likely be intra-luminary and pedunculated, whereas one springing from the external layer would develop between the layers of the mesentery, or, if opposite the mesenteric attachment, would by stretching the peritoneum become subserous.

The fact that many leiomyomata of the gastro-intestinal tract remain dormant and never produce symptoms worthy of note has already been emphasized. On the other hand, they are capable of a wide variety of complications, depending upon the

location and size of the growth as well as the degree of malignancy. Submucous growths, for instance, are particularly prone to ulceration and hemorrhage. The latter may range from a slow gradual oozing to a sudden massive hemorrhage and death. According to Wolfer, Rieniets, Balfour, Dixon and Steward, Raiford, Melnick, Rankin and Down, such tumors may readily be the cause of gastro-intestinal bleeding of obscure origin, which may lead to severe secondary anemia and eventually death. Furthermore, ulceration may result in perforation and peritonitis, as it did in a case reported by Cattell and Woodbridge.

In the stomach, a submucous pedunculated growth may produce an intermittent pyloric obstruction, and in the small and large intestine it is not uncommonly the cause of intussusception.

Subserous growths are rarely pedunculated, and Wolfer states that they may vary in size from that of a cherry to that of a mass filling the entire abdomen. Adhesions often develop, as the result of which the tumor may become fixed to the viscera, or to the abdominal wall, thereby increasing the possibility of intestinal obstruction. In the case of the small intestine, angulation may be produced by the weight of the tumor, even in the absence of adhesions. Where the growth is of the mixed type and encroaches upon the mucosa, ulceration and hemorrhage may result, as it does in the intra-luminary type.

Thus we see that even though leiomyomata may be benign, they may be the source of grave complications and should therefore be considered in the diagnosis of any case presenting vague abdominal symptoms. This is particularly true where a history of intermittent attacks of intestinal obstruction is obtained, or where the case is complicated by gastro-intestinal hemorrhage of obscure origin.

More often than not the tumor is not palpable, in which case the roentgen ray is of great value in arriving at a diagnosis. The treatment is surgical, the technical procedure depending upon the immediate complications to be dealt with, the location of the growth, whether or not it is malignant, and in benign cases the risk of the operation *versus* the risk of carrying the tumor.

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Medical Arts Building.

Discussion

DR. CARRINGTON WILLIAMS, Richmond: Dr. Jones has presented a very interesting question to us today, and from the figures which he quotes from the Mayo clinic, one which must be very much more prevalent than is usually seen.

However, I can't believe that the figures are correct which state that sixteen to twenty per cent of all stomachs would show these particular tumors. They must be very much less frequent than that. I think that if sixteen per cent of all people had this tumor, even though very small, it would be much more frequently seen in general surgical practice. My impression is that it is very rarely seen. In fact, all benign tumors of the stomach and all tumors of the small bowel are very rare conditions.

Dr. Jones' two cases illustrate two of the conditions which result from the presence of these benign tumors, his first being a deformity of the pyloric end of the stomach, and the second case an intussusception resulting from the tumor in the bowel.

He has called attention to the other facts which also may suggest the presence of this tumor, such as hemorrhage and pyloric obstruction, intestinal obstruction, due to the bulk of the tumor, and that intestinal obstruction when not complete gives rather vague indefinite abdominal pain, and of course when complete the typical picture of intestinal obstruction.

It also may be diagnosed, or rather the general condition may be diagnosed, by a palpable tumor, because, when these tumors are sub-serous and do not encroach on the lumen of the bowel, they may grow to a very considerable size.

Now, in Dr. Jones' second case, he tells us that the patient lost twenty pounds in weight. I think that is very unusual in this condition, except in those cases of hemorrhage and pyloric or other intestinal obstruction.

I was also interested in Dr. Jones' discussion of the

question of the malignant muscle tumor, and whether the malignancy was the result of a change from the primary benign tumor or whether it started out as a primary malignant tumor. My impression is that the pathologists in recent years have rather inclined to the idea that a malignant tumor has always been a malignant tumor, and the change from benign to malignant is very rare. I also have the impression that there is a change the other way now, and that the pathologists are swinging toward the theory that has been held for so many years that benign tumors may become malignant.

The few cases of malignant leiomyoma have certainly given a history that is consistent with that of a benign tumor over a period of many years, and my personal impression is that benign tumors can become malignant, and need not necessarily start as malignant tumors.

I think Dr. Jones has called our attention to a very important subject, and if the frequency comes anywhere near the figures which were shown in the Mayo Clinic report, it is something that we should be much more on the look-out for than we usually are.

DR. CHARLES R. ROBINS, Richmond: I want to report a case of leiomyoma of the small intestine.

As I understand it, these cases are very rare. The interesting point about this particular case is that the patient was an elderly gentleman, with a history of what appeared to be an incomplete obstruction. He was suffering a good deal of pain, and most of his trouble was in the left lower abdomen. It looked like a case of malignancy.

He was operated on, a marked intussusception was found, and a large part of the small intestine was distended. That was relieved, and the patient was supposed to be cured.

However, he did not get well, and continued to complain, and he began to get worse again. At the second operation, we found one of these benign tumors, which had evidently been the cause, in the small intestine. This was about the size of a horse chestnut, and the mucous membrane of the small intestine was eroded at the point of contact, but there was no erosion on the tumor itself.

This tumor was certainly benign. It was interesting because it occurred in an old man. How long it had been there, we don't know. But, at any rate, he got well, and is all right now.

DR. JONES, closing the discussion: I wish to thank Dr. Williams and Dr. Robins for their discussions. I agree with Dr. Williams that the frequent occurrence of leiomyomata in Rieniet's review is startling. However, his report has opened our eyes to the fact that these tumors do occur much more often than we have realized in the past, and I feel sure that a more careful search for them in routine examinations of the stomach and intestine will bear out this conclusion.

A PROSTHETIC OBTURATOR AND PLUMPER.*

JOHN BELL WILLIAMS, PH. G., D. D. S.,
Richmond, Va.

In dentistry the term "prosthesis" means the replacement of missing teeth by artificial substitutes. An "obturator" is an appliance which closes an abnormal opening between the mouth and other cavities. A "plumper" is a device carried in the mouth to fill out the cheeks. To sticklers for scientific terms these three unusual words are necessary to describe a certain piece of dental mechanics. Since unusual words are sometimes misused, this paper will be called the report of a dental plate designed to cover unnatural openings and to restore a sagging cheek.

This replacement was made for a patient referred to me by Dr. S. W. Budd, who kindly wrote the following brief history:

"In the early summer of 1933, Mr. R., a young man of about twenty years, consulted me concerning a growth the size of an orange involving the left antrum and the hard and soft palate, and also extending out into the cheek. The growth and the infection accompanying it made a sizable swelling which partially closed the left eye. There was considerable bone destruction. The growth had broken through the hard palate and bulged into the oral cavity.

"The patient had been treated surgically by Dr. E. C. Bryce who recognized the condition was malignant and sent him to me for consultation and radium treatment. I obtained some tissue for biopsy and found the growth to be a very active perithelial sarcoma (Fig. 1). I informed the family that I feared little could be done for him but I would give him the benefit of radium treatment.

*Read at a meeting of the Staff of the McGuire Clinic, St. Luke's Hospital, Richmond, Va., October 16, 1934.

"The young man was taken to an evangelist by friends who prayed with him and finally converted him, but for some reason or other the tumor did not disappear as a result of the prayers. Some two or three weeks later he came back to get his radium treatment. For the first treatment I gave him 2,400 milligram hours with capsules (screened by brass and rubber) placed into the antrum, and with needles widely distributed over the growth. A month later I gave him 1,800 milligram hours with capsules placed into the antrum and again screened with brass and rubber. He was then referred to Dr. E. L. Flanagan who gave him an extensive series of X-ray treatments over a period of three months. About three months later I

Fig. 1.

saw the boy after the infection and reaction had subsided and the growth apparently had disappeared. A large portion of the hard palate on the left side had sloughed out and he talked like one with a cleft palate. I referred him to Dr. J. B. Williams for a correction of the deformity of the mouth.

"The patient informed me some six or seven months after his recovery that his prayers and not the radium had cured him. I felt rather keenly that we should be denied the credit of this brilliant result."

The dental examination revealed the presence of all of the lower teeth and all of the upper teeth except the left bicuspids and molars. The opening through the palate was a very large one, while the opening from the vestibule of the mouth into the

Fig. 2.

antrum showed the destruction of a portion of the floor and the entire outer wall of that cavity. Fortunately, a bridge of strong healthy tissue separated these openings (Figs. 2 and 3). Until a short while ago it was difficult to obtain a dental impression of such deformities, but with the use of dentocoll, a new material with an elastic base, the technique is now easy and simple. The dentocoll when warm is soft and can be forced into openings. When it

Fig. 3.

cools it becomes hard and makes an accurate mold of the space it occupies. Owing to its elasticity it can be compressed and removed without breaking. It flies back in place like a rubber band and it shows all under-cuts and other inequalities of the surfaces. From this negative a positive cast or model of the mouth can be made in plaster.

An appliance constructed on this type of cast was used in the case under discussion (Fig. 4). It consisted of a hard rubber plate, replacing missing teeth, covering the entire hard and a portion of the soft palate, and artificially reproducing the walls of the maxillary sinus. Stabilization and retention were secured by the use of rubber spurs and gold bands around the natural teeth (Fig. 5).

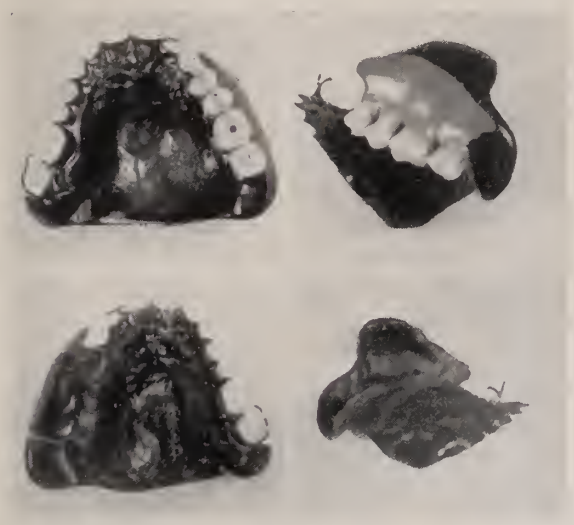

Fig. 4.

Fig. 5.

Within two days after the patient began wearing the plate the outline of his face became much more normal and he was able to eat without discomfort and to speak with an approximately normal voice.

REPORT OF A CASE OF SIAMESE TWINS AT FULL TERM.

E. L. JOHNSON, M. D.,
Bedford, Va.

On the night of October 13, 1934, at 2 A. M., I was called to attend Mrs. P., white, who lived in an isolated and mountainous section of the county, a distance of about twenty-five (25) miles from my home.

On arriving at the home about one and one-half hours later I found Mrs. P. in the first stage of labor. She was a woman of about 125 pounds—normal weight—and twenty-seven years old. Her history revealed the fact that she had given birth three years ago to a normal child with no unusual trouble during pregnancy or at the birth of the child; her history also recorded a miscarriage about eighteen months ago after two months pregnancy.

As soon as possible I made the usual preliminary examination. I found a very large abdomen and what was apparently an unusually large fetus. I was unable to detect but one fetal heart sound. On rectal examination, I found the os to be slightly dilated and the head presenting normally. I administered two sodium amytal capsules and the patient progressed normally during the first stage of labor.

At 6 A. M., I made a second examination and found the os completely dilated and the second stage of labor begun. At this point I started giving chloroform, and in a short time a head was delivered. In attempting to rotate the body in order to expel the shoulders, I encountered great difficulty in rotating it in either direction. It was at this point I realized that I was facing an abnormal situation.

While still attempting to deliver the posterior shoulder I found there were two arms instead of

one, and, in following the arms, they both seemed to be attached to the same body. On examination of the anterior shoulder I found only one arm. Thinking perhaps that I was dealing with an ordinary case of twins, I pushed the posterior arms back as far as I could, then worked the anterior arm and shoulder from under the pubic bone. I then made traction with my hands on the delivered head, but was unable to move it in any direction. I then proceeded to work the posterior arm and shoulder out, but with all the traction I was able to exert on the head I was still unable to deliver it. At this point I rotated the body back to the hollow of the sacrum; then, by pushing my hand up by the side of the child's body, I was able to grasp a leg. By bringing this down, the head and arms of the child having already been delivered, the rest of the body was easily expelled. The delivery of the second child was practically easy. By grasping the feet and doing a version the body and head were delivered without difficulty. The head of the first child was the first to be delivered, while the head of the second child was expelled last. To my surprise and utter amazement, I found that birth had been given to two well-developed girl babies, except for the fact that their bodies were joined together in front, from the clavicles to the umbilicus. Their combined weight was 14 pounds.

Looking at them from the front, there seemed to be only one body, but from the rear they had separate backs and normal spines. Both heads were well developed.

Their buttocks, legs, arms and genitals were normal; in fact, I would call them two perfect specimens of newborn babies, except for the fact that they were united. These children were alive at the beginning of labor, but, owing to the great difficulty experienced in delivering them, they were still-born.

You may imagine my predicament at this lonely mountain home, twenty-five miles from the nearest hospital or doctor and no one to help except an inexperienced sister of the patient who grew very hysterical as the case progressed. I was fortunate in the fact that the patient was not lacerated, but I had to contend with an adherent placenta which gave me almost as much trouble as the delivery of the children. I am glad, however, to be able to say that, in spite of the prolonged and exhaustive delivery, the patient made an uncomplicated recovery.

REVIEW OF PAPERS READ AT MEETING OF THE AMERICAN SOCIETY OF CLINICAL PATHOLOGISTS.*

REGENA COOK BECK, M. A., M. D.,
Richmond, Va.

The thirteenth annual convention of the A. S. C. P. was held at Cleveland, Ohio, on June 8th to 11th.

It will be impossible to do justice to each paper presented at the meeting or to review all of them, so I have only reviewed a few of the things which seemed outstanding to me.

Drs. Kracke and Parker, of Atlanta, presented a paper on the etiology of neutropenia with particular reference to drugs containing the benzene ring. Their experimental work and research indicates that

*Read before the Stuart Circle Hospital Clinical Club, November 14, 1934.

acute fulminant neutropenia and probably the chronic types as well are caused for the most part by the administration of easily oxidizable benzene ring drugs—notably amidopyrine, occasionally phenacetine and dinitrophenol. Barbiturates as a class have little or no effect in the production of the leukopenic state.

Dr. Martin, of Norfolk, read a paper on the treatment of malignant neutropenia by injection of liver extract. He reported three cases thus treated. All three patients recovered and were well at the time of reporting. One of them had to continue on a regular ration of liver.

Dr. Hellwig, of Wichita, presented a paper on morphogeographic studies of the thyroid gland obtained at autopsy. He demonstrated that the histology of thyroids of patients from different countries differed greatly and that this difference was manifest from infancy to old age.

Dr. Ikeda, of St. Paul, demonstrated that pneumonia in babies is frequently due to oil aspiration from the food and from nose drops. He presented many cases and demonstrated the oil in the lung tissue by special staining methods.

Dr. Banks, of Indianapolis, presented the work he has been doing in treating lues of the central nervous system. For centuries physicians regarded fever as an alarming symptom. In 1917 it was demonstrated that artificially induced fever was capable of overcoming the ordinarily disastrous effects of syphilis of the central nervous system. In the short period which has lapsed since this discovery, evidence has accumulated which makes it quite apparent that fever exerts an adverse influence upon the growth of bacteria, diminishes the potency of toxins, favors phagocytosis, and stimulates the development of immune bodies. The inherent dangers of engrafting one serious disease (malaria) upon another as a therapeutic measure naturally led to a diligent search for a less hazardous method of producing the same effect. Comparable results were obtained by other workers following inoculations with the organisms of rat-bite fever, relapsing fever, typhoid vaccine and other foreign proteins. It became more and more apparent that simple fever production was the one factor common to all of these methods. Dr. Banks used a vaccine made from pyrogenic bacilli killed at a high temperature. Wassermann fast patients became two-plus, one-plus, or negative. The majority of his patients returned to work. The results seemed to be comparable with the results of malarial treatment and not so dangerous to the patient.

Dr. Kernohan, of Rochester, demonstrated by lecture and lantern slides the preparation of neurologic material for histologic study. He gave his classification for tumors of the brain and stated that the methods given were incomplete, but, by their use, most lesions of the nervous system could be detected and a correct diagnosis reached. The purpose of the paper was to simplify the methods and to make possible the study of neurologic tissue in any laboratory without the necessity of elaborate equipment or of very complicated staining methods.

Dr. Foord, of Pasadena, presented a case of subacute bacterial endocarditis due to diphtheroid bacilli. Blood cultures on this patient were always positive and although the colonies on the blood agar plates looked like streptococcus viridans, the smears showed the organism to be a diphtheroid bacillus. These diphtheroid organisms were agglutinated in a 1-5000 dilution in the patient's serum. At autopsy a culture was made from the heart's blood. This also showed a diphtheroid bacillus. Sections of the heart valve showed diphtheroid bacilli in the tissues. Dr. Foord continued to subculture and re-subculture the organism, and after many subcultures the diphtheroids changed to streptococci. This demonstrates that there are still many things to learn about the habits of bacilli.

Dr. Osterberg, of Rochester, presented a paper on the arsenic content of the brain in relation to so-called hemorrhagic encephalitis. The hemorrhages are limited almost exclusively to the white matter, the gray matter being practically unaffected. This finding is not usual in any recognized form of encephalitis. The white matter of the entire cerebrum, midbrain, pons, cerebellum, and even of the pyramidal tracts of the medulla oblongata may be infiltrated with innumerable petechial hemorrhages. His microscopic slides showed red cells surrounding the capillaries which were thrombosed and sometimes hyalinized. The red cells were in an excellent state of preservation, without any sign of degeneration or of formation of blood pigment. There was no inflammation present. In places it looked like gross hemorrhage but microscopically it showed small petechial hemorrhages packed together. He says

that arsenic in food as well as arsenical treatment will produce this condition. The patients go into coma from two to five or two to twenty days after ingesting the arsenic or after treatment. Dr. Osterberg suggests that, in the presence of an unexplained gross hemorrhage or of multiple petechial hemorrhages in the white matter of the central nervous system, a chemical investigation for arsenic be carried out, since the presence of relatively large amounts of this element may explain the cause of hemorrhages.

Dr. Kehoe, of Cincinnati, presented a paper on the determination of lead in urine and tissues. He states that the rough tests used in clinical laboratories are worse than useless and especially since a legal angle in these cases is always possible. Dr. Kehoe feels that this test is a chemists problem, with which statement I agree after hearing the paper.

Dr. Tripoli, of New Orleans, gave his diagnostic methods in amebiasis, and the relative value of stool culture as compared with other methods. A pathologist who has been stationed at Panama for some years, and whose name I have been unable to recall, gave as his opinion that the fresh wet and fresh stained preparations were best for diagnostic purposes. He pointed out that with cultures it was still necessary to identify and classify the amoeba. Scrapings from the rectum examined as fresh wet preparations, is the method he uses.

Dr. Kline, of Cleveland, told of further studies made on antigen emulsion preparation for the ball test. This is a test for syphilis. The antigen and patients serum are mixed together in a test tube. Salt solution is added and after shaking the tube a white ball forms, suspended in a clear fluid, in a positive (four-plus) test. This would be a very easy test to read. Further studies are being made by Dr. Kline to perfect a stable antigen.

Dr. Eagle, of Baltimore, described his results obtained with a uniform stable and lyophile complement. Complement is one of the reagents used in the Wassermann test. The serum of guinea pigs is the source of this complement and it is necessary to collect it fresh each time the Wassermann test is run. Ways and means of preserving this reagent have been under investigation for some time. Dr. Eagle has devised a way of rapidly drying the sterile guinea pig serum in an apparatus by means of a vacuum and carbon-dioxide. Sterile water is used to dissolve the dried serum and it is then ready for use. Complement, thus prepared, has remained at a constant titer for five months. This is as long as the tests have run but he feels that it will keep much longer. The very practical application of this experimental work is that immune sera can be prepared in this same way. Immune sera, as they are now prepared, deteriorate very quickly. With this new method the patients will be certain to receive potent sera.

Dr. Heise, of Uniontown, discussed the medico-legal application of isoagglutinins. He presented a case in which he was called upon to determine whether a certain man was the father of a child. In this connection it might be interesting to call to your attention the three new blood groups discovered by Landsteiner and Levine. These new blood groups are designated M, N, and MN. Owing to the fact that the new blood groups form no antibodies in the human blood the mixture of M blood with N blood during a transfusion does not constitute a menace. The newly discovered blood groups are inherited in accordance with definite laws. The determination of the M and N groups alone is sufficient to divert suspicion from a suspected father in 18 per cent of the cases. In combination with A and B groups (i. e., types 2 and 3) the number of positive results are increased to 31 per cent. The fact was emphasized that you can prove non-paternity in 31 per cent of the cases but not in any case can you prove paternity.

Dr. Hodges, of Huntington, W. Va., read a paper on paralytic accidents due to anti-rabic inoculations. He had observed three such cases. He says there is one complication in 3,500 treatments and that children and old people seem immune while intellectual people seem to be the ones to show this complication.

Dr. MacCarty, of the Mayo Clinic, discussed the early diagnosis of cancer of the stomach. He says that any ulcer larger than a quarter is cancer, while the small ones may or may not be. He also states that 35 per cent of all cancers are in the stomach. He says that any patient with the slightest gastric symptoms should have a gastric X-ray; in fact, a routine gastric X-ray every six months would greatly reduce the mortality from gastric cancer. He reiterated that the early diagnosis of cancer rests on the roentgenologist and pathologist and that the patholo-

gist must be able to recognize and distinguish the cancer cells from all other body cells.

Dr. Sweany, of Chicago, read a paper on pathogenesis of lung cancer, stating that this condition is on the increase. He gave as causes: dust, tar, diseases, etc. He said that influenza was the only disease to deserve consideration as, when it heals, it simulates a carcinomatous growth. The cause of primary carcinoma of the lung is probably the same as for carcinoma elsewhere in the body. Radium in radium mine workers is the only definite etiologic agent. The growth originates from the basal cell layer of the mucosa of the bronchus which is the regenerating membrane. This basal cell membrane can grow cells of many different shapes, basal cells, squamous cells, or cylindrical cells. The basal cell gives the most rapid growth and is the most radiosensitive. The squamous cell type is the most amenable to surgery.

Dr. Brines, of Detroit, reported fourteen cases of primary carcinoma of the lung. Seven were adenocarcinoma, four squamous cell carcinoma and three basal cell carcinoma. He terms the basal cell carcinoma, oat cell carcinoma. This latter type formerly was often diagnosed sarcoma. He also stated that all primary carcinomas of the lung are bronchogenic in origin.

Dr. Anna May Young, of Cleveland, demonstrated the rapid pigment appearance in Ohio red-bellied Dace as a test for intermedin. Intermedin is the internal secretion from the middle lobe of the pituitary gland which controls pigment metabolism. She obtained her intermedin by mincing ox pituitary and extracting with NaOH. The test animal, the red-bellied Dace, is a minnow found in certain Ohio streams. Normally the under surface of this fish turns a bright red during the spawning season. Using a tuberculin syringe, she injected under the shin of the backs of these fish .05 c.c. of the extract of intermedin. In less than three minutes their under surfaces were a bright red. Urine from a patient with a tumor of the middle lobe of the pituitary will give a positive test. The urine is concentrated ten times and one-tenth of a c.c. is injected. The urine is very toxic to the fish and, because of the large dose necessary, many die. Experimental work is being carried on to overcome these obstacles. An increase of this hormone is also found in the blood of patients having melanosarcoma and neurogenic sarcoma.

Dr. Bleyer presented a case of intestinal fibromatosis. The condition followed a ruptured appendix. The ascending colon was greatly thickened due to a fibrosis of the outer coat and the lumen was reduced to 5 millimeters. The condition simulated malignancy. Complete removal was necessary because of the obstruction.

While in Cleveland, I visited Dr. Kline's laboratory at Mt. Sinai Hospital to have him demonstrate the Kline test for syphilis. This test, like the Kahn test, is a precipitation test. However, instead of using large quantities of reagents in a test tube, small quantities of antigen and patient's serum are mixed on a glass slide, rotated for two minutes and then the results are read by the aid of a microscope. A four-plus gives an agglutination that looks very much like the agglutination of incompatible bloods. Even the one-plus is easy to read. It is my intention to run a series of these tests and, if the results are as I expect them to be, I will suggest substituting this test for the Kahn test, as I consider the Kahn test in the weaker readings very difficult to read and therefore unsatisfactory. There is always a chance of missing a one-plus Kahn. With the Kolmer Wassermann, a one-plus or plus-minus would not be missed even by a person who had had very little experience in reading them. For this reason most serologists have retained the Wassermann test and used the precipitation tests as a check.

Dr. Exton, of New York, gave a new technic for the sugar tolerance test which cuts the time of performing the test from a two-hour period to one hour. The technic is based on Allen's paradoxical law of dextrose which is as follows: the paradoxical law of dextrose distinguishes sharply between diabetic and every type of non-diabetic animal. Whereas in normal individuals the more sugar given the more is utilized, the reverse is true in diabetes. The procedure of the test is as follows: a fasting specimen of urine and blood is collected. However, previous food taken by the patient has no effect on the test except that the curve is higher, but the character of the curve is not affected. After taking the fasting specimens, the patient is given 50 grams of glucose in 325 c.c. of water, which makes it a 15 per cent solution. This solution, flavored with lemon

juice and chilled, is easy to drink within one minute. In exactly one-half hour after the glucose solution has been taken, another specimen of blood is taken for a sugar determination. Another 50 grams of glucose in 15 per cent solution is given. In exactly one-half hour another specimen of blood is taken and a specimen of urine. A normal patient will not show any sugar in the urine following this amount of glucose given in this way. In a normal person, ingestion of 50 grams of glucose stimulates the insulin-glycogen mechanism to such activity that the normal organism is then able to deal with any amount of glucose without becoming hyperglycemic. When the second 50 grams is ingested it is better handled than the first. In the diabetic the insulin-glycogen mechanism fails; the first 50 grams of glucose uses up what insulin there is, it is not produced in excess, nor even in a normal amount, so that, when the second 50 grams is ingested, the patient reacts with a distinct hyperglycemia. The curves given by this new test are typical and easy to read.

Beginning with the September number of the *American Journal of Clinical Pathology*, all of the papers read at this meeting will be published in detail. Anyone wishing additional information on these subjects can refer to these journals.

1103 West Franklin Street.

SOME OBSERVATIONS ON THE CARE AND TREATMENT OF DISEASED TONSILS.*

BOOKER LEE, M. D.,
Pulaski, Va.

Diseased tonsils is one of the most common conditions which undermine the health of the human body that we face today and which has to be met and studied by both the general practitioner as well as the specialist.

As diseased tonsils covers such a large field, we will only briefly discuss the symptoms and treatment.

As to their clinical appearances and for matter of descriptive purposes, we will divide the faucial tonsils into several varieties.

When it is of ovoid or almond shape it is usually a sessile, unoffending, pitted body which does not markedly project beyond the plane of the internal edges of the faucial pillars.

They may be partly covered by hypertrophied anterior pillars which it is necessary to draw aside in order to disclose them. These are spoken of as "submerged tonsils." Their retracted state and the valve-like action of the mucous fold over them, preventing the occasional emptying of the lacunar pits, are responsible, doubtless, for the frequency with which patients bearing such tonsils give evidence, by the swollen state of their cervical lymphatics, of their acting as the reservoir for bacterial proliferation, and as the portals of systemic infection.

When projecting beyond the pillars toward the middle line of the pharynx, the wide, gaping mouths of the lacunae are likely to be filled with buccal secretions or food, if they are not occupied by the products of tonsillar inflammation. They may be so large as to meet in the middle line, and when this condition obtains in an especially capacious adult pharynx they are very formidable looking structures.

TREATMENT

A thorough course of medical treatment under close observation should be persisted in at first by using antiseptic and healing throat sprays and gargles, as Tincture Merthiolate, S. T. No. 37, Peroxide, Silvol 10 to 25 per cent, Guaiacol, Tannic Acid and Glycerine, Tincture Iodine 25 to 50 per cent with Glycerine, 25 per cent Ichthyol, or topical applications of 25 to 50 per cent Silver Nitrate two or three times a week.

Before taking up the operative treatment for removal of tonsils, I feel that great judgment should be exercised when advising patients to have their tonsils removed, because it is quite an operation to

*Read before the Southwestern Virginia Medical Society, Radford, Va., September 21, 1934.

subject your patient to, and it would be a great disappointment both to the patient and to the specialist if the desired benefit or results were not obtained.

First, we will take up the local method which is usually contraindicated in patients of a very neurotic type, in cases with valvular heart disease, and in children under fifteen years of age. Where the local method is used, even when the patient is vigorous, strong and healthy and has a very steady nerve, I think psychology plays a very major part, and I always leave it up to the patient whether they want to have their tonsils removed locally or under a general anesthetic.

For local tonsillectomy I usually prefer the following technique: Use a 2 per cent solution of novocaine with fifteen minims of adrenalin to the ounce. Inject just under the mucosa, along the entire length of the anterior pillar, around the upper pole and along the upper one-third of the posterior pillar. Then with my needle I go through the tonsil and inject its posterior surface at the upper, middle and lower pole, which usually anesthetizes the large nerves entering its posterior surface. By this method the tonsils can be removed absolutely without any pain to the patient.

Then with my Leland knives, with blades at right angle to the handle, I free and preserve the anterior pillar around the upper pole and upper one-third of the posterior pillar. With curved tonsillar scissors and the Hurd separator I thoroughly free the upper pole and anterior surface of the tonsil; then I apply the wire snare and allow it to do the remainder of the dissection. By holding a sponge with a little pressure in the fossa for about one minute the small oozing is controlled.

For removal of tonsils under a general anesthetic I prefer to use the Douglas Demoresque tonsillotome which has a fenestrum the size of the tonsil and two blades—a sharp blade, and a dull or hemostatic blade. The most important point with this operation is the technique of thoroughly getting all of the tonsil through the fenestra and leaving nothing but a portion of the mucous membrane and the anterior and posterior pillars; then I shove down the hemostatic blade and lock it good and tight and allow it to remain in place for three minutes, which is the usual coagulation time. By the vise-like pressure of the hemostatic blade the lumens of the blood vessels are sealed together. With my tonsil forceps I grasp the tonsil to keep it from being aspirated or swallowed. Then I come down with the sharp blade which completely cuts the tonsil off.

The advantages of this method are: You can do a completely bloodless tonsil operation; the anterior and posterior pillars are entirely preserved; there is very little resulting edema and traumatism to the surrounding tissues; patients convalesce more rapidly, and it always leaves a good looking throat.

In this operation as well as in the local method great skill is necessary in order that the dissection will completely remove the tonsils and leave no remaining tags or piece of tonsil. Effort should also be made to minimize the post-operative scar tissue and deformity to the pharynx in order to leave the throat in the best possible condition.

CHEMICAL INJURY OF CORNEA IN THE NEW BORN, WITH REPORT OF EXPERIMENTS.

SIDNEY TRATTNER, M. D.,
Richmond, Va.

The importance of corneal scars and the role they play in reducing vision needs no emphasis. It would therefore seem a likely subject for investigation from the therapeutic standpoint. Much work has been done but a search of the literature reveals very little of much value. Most of the work is over ten years old. In fact, the scarcity of the reports in the later literature available was surprising.

The fine recuperative powers of children's and especially infants' corneal tissue are well known. Damage that would be permanent in an adult, with loss of useful vision, is often recovered from in children. None of the literature seen discussed this difference in recuperative power between the infant and the adult cornea. To say that in one instance the tissue is young and in the other old seems

merely to be begging the question. From work that has been done in tissue culture *in vitro,* the indications are that, in some instances at least, tissue cells are potentially immortal; that aging is a biochemical process subject to control.

CASE REPORT OF CHEMICAL INJURY OF THE CORNEA IN THE NEW BORN

W. J., new born, colored, was brought to me by the doctor who had conducted the delivery the previous day, June 25, 1933. The history given by the doctor was as follows: Immediately after delivery he had followed his usual procedure of instilling drops in the child's eyes. In a short time marked edema of the lids developed with evidence of discomfort on the part of the child and finally a purulent discharge. I saw the child when it was about twenty-four hours old. At this time the lids of both eyes were very edematous, the conjunctivae were swollen and deep red, and there was a muco-purulent discharge. Both corneae were badly damaged, no clear corneal tissue being visible. The damaged areas were white, rough and totally opaque, having the appearance of rough moist plaster. The left eye appeared the worse.

A smear of the discharge showed an absence of organisms. Questioning the doctor brought out the fact that he had asked the druggist for a silver nitrate solution of the strength he had been accustomed to use. It was his opinion that the druggist had given him a stronger solution. No prescription had been written so that it was impossible to verify this. The drops were in the possession of the patient's father who was keeping them as evidence since he intended to bring suit. He could not afford the chemists' fee for examination. The result was that it was impossible to determine the exact nature of what had caused the damage. However, I am satisfied the agent was chemical in nature, probably nitric acid, as no organisms were found and no evidence of infection ever presented itself.

Treatment consisted of: atropine sulphate 1 per cent solution daily, cold boric acid irrigations and white vaseline in the conjunctival sac. Symblepharon appeared at one small point in the left eye. This was snipped with scissors. No further complications appeared.

The prognosis given the parents was, of course, gloomy. Even considering the recuperative powers of the infant cornea the damage done was so severe as to make the outlook very poor.

The conjunctivae took on a normal appearance about July 20th, almost a month after the accident. At this time procedures for irritating the corneae were instituted, such as massage with yellow oxide of mercury ointment, instillations of dionine, and instillations of various strength solutions of glycerine in water. These procedures are used with the idea of increasing the blood flow to the anterior segment of the eye. I doubt that they had any effect on the result.

Change in the corneal opacities did not become visible until about four weeks after the accident, although the surface of the corneae became smooth before this time. Once the opacities began to clear up progress was rapid. On August 15th the right cornea was almost entirely clear, only a faint macula remaining at about 5 o'clock. The left cornea was also clear with the exception that beginning at about the center and extending toward 7 o'clock there was a fairly dense white strip containing a leash of blood vessels. The child used its eyes as any infant of its age might be expected to do. The patient was seen on November 8th, unfortunately for the last time. The opacity in the right cornea was then invisible except on illumination, and the opacity in the left cornea was decreased in size from the time of the previous examination but otherwise unchanged.

The astonishing manner in which this severe corneal damage was repaired led to some experiments in the laboratories of the Medical College of Virginia. The idea involved was to increase the nutrition of the corneal tissue and at the same time hasten the carrying away of debris by the injection of biological preparations. The results were entirely negative as regards the main object of the work, but there were some side results that might be of interest.

The first step was the production of a corneal scar in a laboratory animal that was known to be mature. Guinea pigs were used, not because they were the animals promising the best results, but because they were available in sufficient numbers and had eyes large enough for the technic involved. Silver nitrate in 10 per cent strength was used first but the resulting scar was negligible, so pure phenol

was substituted. Even this had to be used without washing and had to be repeated before a scar of suitable density was obtained. Six pigs were so treated, the left eye being used as a control. Subconjunctival injections were then made at two-day intervals, the solutions employed being: Guinea pig serum and guinea pig plasma each diluted 50 per cent with Tyrode's solution; physiological saline; and Tyrode's solution.

In looking through any work on ophthalmic therapy it will be found that subconjunctival injections are recommended for almost every diseased condition of the eye-ball. In the work just reported, they were used in an attempt to influence the clearing up of corneal scars. In this series of animals the injections were made, perforce, at a point not more than two or three millimeters from the corneal margin, as the guinea pig has a small eye. In five of these animals the injected eye fared worse than the control; in one animal it fared no better. It was considered possible that the fluid supply of the cornea was being interfered with because of injury to the conjunctiva at a point too close to the corneal margin. A second series of ten animals was prepared in the same manner, using pure phenol, and in these the injections were made under Tenon's capsule instead of subconjunctivally. The results in this second series were inconclusive, the injected eyes faring neither better nor worse than the control eyes. Judging by these results, the thought occurred that perhaps subconjunctival injections did not have as great a therapeutic value as might be assumed from reading books on ophthalmic therapy.

SUMMARY

1. Severe burn of the corneae in a new-born child, supposedly by silver nitrate.

2. Practically complete recovery of the right cornea in two months; less recovery in the left cornea, but still with a large area of clear corneal tissue.

3. Failure to aid recovery by subconjunctival injections of biological preparations in guinea pigs.

4. Possible adverse effect of subconjunctival injections as a therapeutic measure.

603 Professional Building.

Correspondence

An Improved Test for Detecting Monocular Malingering.

TO THE EDITOR:

For many years it has been known that when looking through a red glass at letters of a red hue, the letters would diminish in intensity, making them more difficult to distinguish, that is provided the opposite eye were closed.

Realizing the above fact, I did some experimental work with Mr. W. H. Delaney, and after many months, we have perfected a Malingering Test by a special printing process, whereby the red letters completely disappear. I emphasize the absolute disappearance of the letters under observation, as it is obvious that the test be an acid one that will stand up under cross fire when we render a legal opinion as to whether one is a Malingner or not.

Not only is this test worked out on the basis to determine whether the one to be examined is Malingering or not, but it is also arranged according to the Snellen Test Type, so that the amount of vision can be determined.

After the completion of this chart and finding that it served my purpose better than any other Malingering Test that we have, and after demonstrating same to our Norfolk Opthalmologists, it was accepted so favorably by those who had seen and used it, that I have given Mr. Delaney permission to copyright the chart and place it at the disposal of the Profession. A. A. BURKE, M. D.

Norfolk, Virginia.
April 10, 1935.

Analyses and Selections

The Physician Versus Proprietary and Official Preparations.

Nat Kanner, M. D., Brooklyn, in *The Virginia Pharmacist*, says:

Almost every minute of the day, some one is playing fast and loose with us. We are being hoodwinked by chicanery, and, being like birds of prey, we do not sing. The physician, intoxicated with pride and with a heart buried in the task of money-getting, has succumbed to the lure of despotic power. He has yielded to the proprietary manufacturer.

Proprietary preparations are divided into secret and non-secret ones, of which there is a sharp distinction. Secrecy implies either fraud or avarice, usually both; of necessity it involves ignorance, and ignorance is the antipode of science. Secret medicines should *never* be employed.

A medicine of known composition, made under patent protection or otherwise controlled by a single manufacturer, may be prescribed, provided (a) that it has been honestly made; (b) that it is honestly marketed, and (c) that it is actually superior for the purpose desired to any uncontrolled preparation available. Such superiority may be either therapeutic or pharmaceutic. For the fact of its existence, however, other evidence than mere advertising claims should be required.

The physician should write prescriptions adapted to present time and individual conditions; hence he should not ordinarily order *ready-made mixtures;* and, with but few exceptions, this is equally true whether the latter be put forth as proprietary articles or be made in accordance with an official or semi-official public formula. Specification of the brand of a manufacturer, or direction of the patient to a particular pharmacist is undesirable, except when such action is necessary to assure the purity, quality or activity of the preparation dispensed. It is then perfectly proper.

Physicians have universally failed to heed the warning that they should not prescribe patent medicines, or write their prescriptions for proprietaries. It is in part, this morbid practice which has placed them in the present picture of despair, in the appalling darkness of Gethsemane.

The proprietary manufacturers, with their ever ready schemes of exploiting the profession, seem to have hypnotized us, into accepting their claims for their products, and we, like gullible targets have been their easy mark. They set the trap, and we fell for it. This would not be so dangerous a risk in itself were it not for the fact that they have attained our good-will, and through the physician's efforts, their products have been used, they then forsook the physician and advertised their products directly to the public. The result then was quite obvious, namely, *self-medication* via the patent medicine route. This is why people medicate themselves more, and see the doctor less.

Is it not time for the physician to awaken to the fact that he is constantly being exploited by the proprietary manufacturer? Doesn't the physician realize that there is no reward for him for bolstering a proprietary, only to learn later that that product has been advertised directly to the public via the newspaper, magazines, radio or drug window displays? Doesn't he know that the manufacturer has waxed rich by the use of such phrases in his advertising as, "ask your Doctor," "your Doctor recommends it," "prescribed by all Doctors," etc. He is constantly being exploited at his own expense and ultimately at the expense of the pharmacist.

Then why doesn't he get wise to himself and stop prescribing all patents, and start using again the old reliable official U. S. P. and N. F. preparations. In less than an hour he can brush up on these preparations by reviewing his textbook on pharmacology. If this could only be conveyed to all Doctors, it would be a haven of refuge to all pharmacists, it would assassinate the patent medicine kings, it would stamp out self-medication, it would end medical exploitation, and once again enrich both pharmacist and doctor alike.

So long as medical and pharmaceutical men tacitly encourage the present trend, so long will serious inroads continue to be made into private medical and pharmaceutical practice. When more physicians shall use U. S. P. and N. F. products only then will there be a material falling off in patent medicines.

Let us start right now, by a system of education, to acquaint the physician with this situation. If he learns to see the light, and learns this quickly, then you will know that it is the beginning of the end for the patent medicine.

Miscellaneous

The Tariff of Fees

Is always of interest to the profession. The tariff adopted by the Richmond Medical Profession in January, 1867, and re-affirmed January, 1887, which recently came to our hands, is given below as our readers may wish to know how they compare with fees of the present time:

MEDICAL

Each visit during the day	$ 2.00
If several patients, for each prescription	2.00

For each hour of detention after the first	$ 2.00		
Each day visit at an hour appointed by the patient or his friends	2.00	to $	5.00
Prescription or advice anywhere	2.00		
Night visit	5.00		
Detention all night	10.00	to	20.00
Consultation visit	10.00		
Single visit or advice (in transient cases)	5.00	to	10.00
Oral opinion of health	5.00	to	10.00
Written opinion of health	10.00	to	40.00
Stethoscopic examination (special cases)	10.00	to	20.00

OBSTETRICAL

Attendance in natural labor, including 8 visits	$40.00		
Attendance in complicated labor	50.00	to $	100.00
Abortion, exclusive of visits	20.00		
Delivery of retained Placenta	10.00	to	40.00

SURGICAL

Vaccination	$ 5.00		
Every subsequent case	2.00		
Introduction of Pessary	10.00	to $	20.00
Applying truss	10.00	to	20.00
Introduction speculum vaginae, first time	10.00		
Subsequent introductions, each	2.00	to	5.00
Dressing recent wounds	5.00	to	10.00
Opening abscess	2.00	to	10.00
Introduction of Catheter, first time	5.00	to	50.00
Each subsequent time	2.00	to	5.00
Introduction of Bougie, to explore	10.00	to	20.00
Hypodermic injection	2.00	to	5.00
Induction Anaesthesia	5.00	to	20.00

Public Health Statistics

I. C. RIGGIN, M. D.
Health Commissioner of Virginia

The communicable disease report received at the office of Dr. G. F. McGinnes, State Epidemiologist, during April, 1935, showed the following cases compared with the same month in 1934:

	1935	*1934*
Typhoid and Paratyphoid Fever	17	19
Diphtheria	52	65
Scarlet Fever	153	113
Measles	2,924	5,764
Meningitis	29	10
Poliomyelitis	0	0
Rocky Mountain Spotted Fever	0	0
Typhus Fever	0	0
Undulant Fever	1	2
Tularaemia	3	0
Smallpox	2	0

With the beginning of summer and the vacation period, we also come to the season of highest incidence of typhoid fever. It is at this time that many families begin to make their vacation plans. Trips to the mountains, seashore, camps, and other resorts and visits to relatives are all considered. Since these vacations necessitate travel into another locality some consult their physician regarding their safety. They ask numerous questions—"Is it safe to use milk away from home?", "Is there a good doctor at such and such a place?"—"Should we be vaccinated for typhoid?" However, the number taking these precautions are few. The majority never stop to consider these important facts concerning travel. This is particularly true of those living in the larger cities and towns where the water supply, milk, etc., are taken for granted. It is assumed that the local health authorities assume the responsibility for their safety. Nor do they consider the fact that in their travels they will possibly visit places where the sanitation is of a low order, that they may drink polluted water and unsafe raw milk. It is for this group that vaccination is urged. They should be advised that immunization for typhoid is a simple and safe procedure of proven value and one that is well worth the effort.

In 1934 the lowest morbidity and mortality rate on record in Virginia was achieved. Since the organization of the health department this decline has been gradual, but steady, due largely to the systematic and constant efforts to improve the general sanitation throughout the state, by isolation of cases and contacts, the inspection of water and sewage disposal, and the proper handling of food and milk. In 1920 there were 1,880 cases and 260 deaths from typhoid. This means that in 1920, 11.2 persons in every 100,000 died from the disease. In 1934 there were less than half as many cases, 780, and only 90 deaths. That is, the death rate is one-third

of what it was fourteen years ago. However, in recognizing how much has been done to control typhoid, care should be taken to continue these efforts, lest what has been accomplished by constant and systematic preventive work be lost and the disease become widespread again.

Typhoid vaccination cannot be advocated too strongly, particularly for those who travel, children going to summer camps, and those living in districts where the disease is endemic. We must exert all possible care to prevent further spread from primary cases, by isolation, nursing care and vaccination of contacts. With careful application of these few principles of preventive medicine a still lower typhoid rate may be expected. We ask the cooperation of the physicians of the State in carrying out these procedures.

Woman's Auxiliary to the Medical Society of Va.

President—MRS. JOSEPH BEAR, 3012 Monument Ave., Richmond.

President-Elect—MRS. FLETCHER J. WRIGHT, Petersburg.

Recording Secretary—MRS. JAMES B. STONE, 2042 Park Ave., Richmond.

Corresponding Secretary—MRS. AMBROSE MCGEE, 4107 Kensington Ave., Richmond.

Treasurer—MRS. REUBEN F. SIMMS, 2034 Park Ave., Richmond.

Auxiliary to Mid-Tidewater Medical Society.

The last meeting of this Auxiliary was held at the home of Mrs. Horace Hoskins in Saluda, April 23rd at 11:00 A. M. Plans for raising funds to continue the philanthropic work of the Auxiliary were discussed and other matters of importance were taken up at this time. At one o'clock a luncheon was held at Blakey's Hotel with Mrs. Hawes Campbell as hostess.

The meeting was resumed at two-thirty o'clock at the home of Mrs. Hoskins with an attractive program. Mrs. R. D. Bates read an interesting account of Colonial Medicine. Mrs. Horace Hoskins gave the poem "To Physicians Everywhere." A paper on the "Life of Jane Todd Crawford" was read by Mrs. Hawes Campbell. The program was well received by a large attendance.

This auxiliary has made splendid progress under the leadership of Mrs. Hawes Campbell, of Enfield. The membership has steadily increased and a great deal of interest has been manifested at all meetings. It furnishes a "Loan Closet" consisting of linen supplies, adult and infants clothes and many articles necessary to the sick, which the doctors of King William County have found of great service in the care of indigent patients.

The Woman's Auxiliary to the Norfolk County Medical Society

Held a card party and dance on February 13th. Approximately 600 people attended. In the afternoon there were fifty tables of bridge while at night there were about seventy. After the card playing there was a dance. Everyone had a most enjoyable time and the receipts were over $310 which will be used for the philanthropic work of the organization.

It is planned to have a committee composed of Mrs. Southgate Leigh, Mrs. M. N. King, Mrs. R. L. Peake and Mrs. C. C. Smith to decide what use shall be made of the proceeds.

On April 15th the Auxiliary participated in a Public Relations tea with the Woman's Club, the speakers being two of the Norfolk doctors. This was very well attended.

The Richmond Auxiliary

Held its annual card party on May 15th at the home of Dr. and Mrs. William T. Sanger in Hillcrest. It was a lovely party and well attended. Considerably more than $100 was realized.

Through the kindness of local druggists, very nice prizes were donated. Door prizes were also given by friends.

The funds in hand will be applied to the welfare work done by the Auxiliary. Recently $75.00 was given the Out-patient Department of the Medical College of Virginia for glasses and for the dental care of indigent patients. The milk fund for undernourished school children is still being provided.

Extract from a National News-Letter.

The Florida Medical Advisory Board and the State Medical Auxiliary Board held a joint meeting recently to formulate some definite work for the coming year. After these plans had been approved by the State Medical Association they were sent out to the various county groups throughout the state. The Woman's Medical Auxiliary of Duval County has adopted an excellent program with seven di-

visions, each covering an entirely different phase of work. They are as follows:

"1. Let each member at all times hold herself in readiness to serve on health committees of any outside organization.

"2. Assist in the dissemination of good health literature by means of an enlarged circulation of *Hygeia*.

"3. Give your wholehearted co-operation to the program of Cancer Prevention and arrange, if possible, one public presentation of Cancer Prevention material in your county, several if advisable, at a time acceptable to the state program.

"4. Assist in the organization of new county auxiliaries.

"5. Hold yourself in readiness to give as wide support as possible when called upon by the State Legislative Committee.

"6. Present to as many organizations as possible the talk on 'The Necessity of Health Cards for Household Servants.' "

(NOTE—This talk deals with the necessity for requiring household servants the same health certificate that is at present required of food handlers. This is advocated for the purpose of lessening the danger from venereal disease as well as tuberculosis.)

"7. Use at least one study envelope during the year. These are for your information and will prove of much value to you if you will choose one or more and assign topics to different members for presentation."

Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted by the Council on Pharmacy and Chemistry of the A. M. A.:

Wm. S. Merrell Company

Diphtheria Toxoid, Alum Precipitated (Refined), ten 1 c.c. vials (10 immunizations) package.

U. S. Standard Products Co.

Polyanaerobic Antitoxin (Tetanus-Gas-Gangrene), Refined and Concentrated.

PROPAGANDA FOR REFORM

Pertussis Vaccine, Immunizing (Sauer), (P. D. & Co.)—In a report on pertussis vaccine prepared after the method of Dr. Louis W. Sauer and marketed by Eli Lilly & Co. (The Journal, March 3, 1934, p. 692), it was stated that the Council does not feel justified at this time to recognize the use of pertussis vaccine of any sort for therapy or prophylaxis until more convincing evidence becomes available. Recently Parke, Davis & Co. presented an identical preparation for consideration of the Council. In accordance with its previous decision, the Council voted to consider this preparation as having the same status as that manufactured by Eli Lilly & Co. and postponed consideration to await the evidence to determine its value. (J. A. M. A., March 9, 1935, p. 834.)

Cod Liver Oil.—Cod liver oil has long held a prominent place among therapeutic agents. Despite studies that have revealed the enormously greater antirachitic potency of viosterol as gaged by the conventional bioassay methods, cod liver oil is still highly regarded. There is evidence that, based on units of vitamin D as determined by assay on rats, cod liver oil is superior to viosterol in the cure and prevention of rickets in human infants. Despite the fact that nearly all fish oils contain vitamin D, perhaps the most striking support for the peculiar efficacy of cod liver oil has been recently brought forward by Bills, Massengale and Imboden, who found that blue fin tuna liver oil with 40,000 units of vitamin D per gram was only one-sixth as effective when assayed with chicks as was cod liver oil with only 100 units of vitamin D per gram. These and other observations have suggested that there are several forms of vitamin D. Holmes and Remington have shown that American cod liver oil contains more iodine than do most ordinary foods (calculated to the dry basis). The content of iodine varies with the place where the fish are caught, the average of the values being nearly nine parts per million. However, it is not to be concluded that cod liver oil should be administered for its iodine content. (J. A. M. A., March 16, 1935, p. 926.)

Aspirin-Bayer.—The original home of Aspirin-Bayer was in Germany. Neither that country nor any others of importance would grant a patent either on the product acetylsalicylic acid or on the process of making it. The United States patent office granted both. As a result, for seventeen years it was impossible for any one in our country to manufacture or sell acetylsalicylic acid except the Bayer Company. This monopoly made it possible for the company to exploit the American medical profession and the public by charging an exorbitant price for aspirin. In February, 1917, the patents on aspirin expired. Any pharmaceutical house may now manufacture acetylsalicylic acid and sell it under the name aspirin. There followed a period during which the Bayer concern carried on an advertising campaign which led the public to believe that the only "genuine aspirin" on the American market was the Bayer product. The same campaign also stressed the alleged harmlessness of Aspirin-Bayer. In September, 1934, the Federal Trade Commission ordered the company to cease and desist from representing in newspaper and magazine advertising or over the radio that aspirin is the trademark of the Bayer brand of acetylsalicylic acid and from making such claims as "It does not depress the

heart," "It cannot harm the heart," "Bayer aspirin is always safe," "You could take it every day without harm," and many other similarly false and misleading claims. The retail price of Aspirin-Bayer has been brought down to a price more nearly comparable with competing brands. (J. A. M. A., March 23, 1935, p. 1009.)

Book Announcements

Recent Acquisitions to the Library, Medical College of Virginia.

The following and other books in the Library of the Medical College of Virginia may be borrowed by members of the Medical Society of Virginia, the only charge being return postage:

American Dental Association—Accepted Dental Remedies.
Barnton & Burstein—Illustrative Electrocardiography.
Barborka, C. J.—Treatment by Diet.
Beard, C.—Whither Mankind?
Beck, B. F.—Bee Venom Therapy.
Bennett, M. E.—College and Life.
Black and Davis—New Practical Physics.
Booklet describing the Leper Settlement at Sungei Buloh.
Briggs, T.—Secondary Education.
Burn, J. H.—Method of Biologic Assay.
Charters & Waples—The Commonwealth Teacher Training Study.
Chevalley, A. and M.—The Concise Oxford French Dictionary.
Commonwealth Fund—A Study of Rural Public Health.
Copeland, R. S.—Home Medical Book.
Corsi, E.—In the Shadow of Liberty.
Counts, G.—American Road to Culture.
Cowdry, E. V.—A Textbook of Histology.
Crile, G.—Diseases Peculiar to Civilized Man.
Curriculum for Schools of Nursing.
Ditmars, R. L.—Confessions of a Scientist.
Doyle—Nursing by Religious Orders in the U. S.
Elmer and Rose—Physical Diagnosis.
Flugel, J. C.—A Hundred Years of Psychology, 1833-1933.
Földes, E.—A New Approach to Dietetic Therapy in Epilepsy.
Foote, J. A.—State Board Questions and Answers for Nurses.
Goldzieher, M. A.—Practical Endocrinology.
Haire, N., ed.—Encyclopedia of Sexual Knowledge.
Hamilton, A.—Industrial Toxicology.
Harap, H.—Economic Life and the Curriculum.
Henderson, Y.—A New Deal in Liquor.
Hess, Mohr and Bartelme—The Physical and Mental Growth of Prematurely Born Children.
Hopkins, L. T.—Curriculum Principles and Practices.
Hunt, J. R., et als.—The Biology of the Individual.
Johns & Pfefferkorn—An Activity Analysis of Nursing.
Kenealy, A.—The Human Gyroscope.
Kretchmer, E.—A Textbook of Medical Psychology.
Lea and Febiger—One Hundred and Fifty Years of Publishing.
Lee, E., and others—Objectives and Problems of Vocational Education.
Leschke, E.—Clinical Toxicology.
Lowell—At War with Academic Traditions in America.
Macleod—Physiology. New ed.
Malamud, Wm.—Outlines of General Psychopathology.
Meigs, J. V.—Tumors of the Female Pelvic Organs.
Morris, R. T.—Fifty Years a Surgeon.
Moyer and Fittz—Air Conditioning.
Munson & Stevens—Story of the National League of Nursing Education.
Musser, J. H.—Internal Medicine: Its Theory and Practice.
Needham, J.—A History of Embryology.
Nursing Schools Today and Tomorrow.
Ogino, K.—Conception Period of Women.
Osborn, F. A.—Physics of the Home.
Osborne, O. T.—Mouth Infection.
Pardee, H. E. B.—Clinical Aspects of the Electrocardiogram.
Pope & Young—The Art and Principles of Nursing.
Prinz & Greenbaum—Diseases of the Mouth.
Purves-Stewart—Diagnosis of Nervous Diseases.
Rivers, T. M.—The Autonomic Diseases or Rheumatic Syndrome.
Seabury, D.—What Makes Us Seem So Queer?
Semon, H. C. G.—An Atlas of the Commoner Skin Diseases.
Sherman, H. C.—Food and Health.
Squire, A. O.—Sing Sing Doctor.
Study on the Use of the Graduate Nurse for Bedside Nursing in the Hospital.
Symington, J.—In a Bengal Jungle.
Thoma, K. H.—Clinical Pathology of the Jaws.
Walsh, W. S.—Making Our Minds Behave.
Waples & Tyler—Research Methods and Teachers Problems.
Waters & Kaplan—Yearbook of Radiology, 1934.
Wheeler, J. B.—Memoirs of a Small-Town Surgeon.
Wheelwright, E. G.—The Physick Garden.
Whitehead, A. N.—Aims of Education and Other Essays.
Wiggers—Physiology in Health and Disease. New ed.
Zinsser, Hans—Rats, Lice and History.

Diseases of the Skin. By RICHARD L. SUTTON, M. D., Sc. D., LL. D., F. R. S. (Edin.), Professor of Dermatology, University of Kansas, School of Medicine. And RICHARD L. SUTTON, JR., A. M., M. D., L. R. C. P. (Edin.), Assistant in Dermatology, University of Kansas, School of Medicine. Ninth Edition. Revised and Enlarged. St. Louis. The C. V. Mosby Company. 1935. Octavo of 1,433

pages. With 1,310 illustrations and 11 colored plates. Cloth. Price, $12.50.

Every practitioner needs in his library a standard work on dermatology. When it attempts to fill many needs by additions in successive editions, it grows and grows until it becomes almost encyclopaedic. This is true of the ninth edition of Sutton's work just published.

Medical authors, who submit their books to colleges for students use should be compelled to come and meet the men, for after all, a book is a message, and the message becomes vital with personal acquaintance. The reviewer, having this privilege, feels the background of this book quite as interesting as the text.

A most able physician elects dermatology as his field of work, and after several years gives to the world, the result of his observations and experience. He does this fully using previous older books as models, but changing and adding his personality to the whole. The result is Richard Sutton's Diseases of the Skin, published in 1916 and a most satisfactory performance.

Now, this man has a son coming on in the same field. The new and modern appeals to him and into the book, the new must come, but always there is that governing mind of great clinical judgment to say just how far he may go.

This situation produces, as would be expected, more than a one man result, but there is a complete unity in scheme and presentation. To the specialist, this book is particularly desirable because of the bibliography which is appended to each subject. It is not a book for students. This need is met by their "Introduction to Dermatology" but it is a book to which every student should have access.

Its field of usefulness is tremendously wide. Its illustration and the idealism of the publisher, as expressed in the technique of printing, make it a very desirable book.

THOS. W. MURRELL.

Contribution of Statistics to the Prevention of Blindness; the Control of School Myopia; Eye Health for Atypical Children; Community Enterprise in Preventing Blindness; the Philosophy Underlying the Education of the Visually Handicapped; the Sight-Saving Class as a Mental Hygiene Measure; the Broad Basis for Prevention of Blindness; Preventing Blindness Throughout the World; Leisure Time Activities for Sight-Saving Class Pupils; Trachoma in Wrestlers: A Menace to Public Health; Corrective and Protective Eye Goggles for Coal Mine Employees. Pamphlets published by the National Society for the Prevention of Blindness, Inc. 50 West 50th St., New York, N. Y. Ranging in price from 5 to 20 cents.

Hospital Service in the United States. 1935. Fourteenth Presentation of Hospital Statistics by the Council on Medical Education and Hospitals of the American Medical Association. The 1934 Census of Hospitals. Hospitals Registered by the American Medical Association. Pamphlet reprinted from the Hospital Number of the Journal of the American Medical Association, March 30, 1935. Price, 50 cents.

The Modern Method of Birth Control. By THURSTON SCOTT WELTON, M. D., F. A. C. S., Editor of the American Journal of Surgery. Walter J. Black, Inc. New York. 1935. Octavo of 168 pages. Cloth. Price $3 00 net.

Birth control is one of the important controversial subjects of today. It is openly discussed everywhere. The New Method, that of Ogino and Knaus, described by the author, is scientifically correct. Whether it will work out in practice, it is of course too early to say. Dr. Thurston's guide is evidently written for the laity, and as often is the case in trying to make things simple we become abscure. To say the uterus is the size of a pear is not as clear as giving dimensions in inches and to call spermatozoa father-cells does not make for clearness. Personally I object to "safe" and "unsafe" being applied to parts of the menstrual cycle when "unfertile" and "fertile" is meant. Why the author should say that the mothers blood flows through the cord to the child, I do not see.

There is an excellent Summary in Chapter VII that gives one the contents of the book in a clear and concise manner.

Virginia Medical Monthly

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Editorial

The Safe Period.

Since 1929 the theories of Knaus and Ogino concerning periodic fertility and sterility in women have occasioned increasing attention and discussion among the profession, even among the laity. Of the two, Hermann Knaus's voice has been the louder. In fact as one reads his book it is hard to swallow some of his Teutonic braggadocio and conceit. Perhaps in one who takes himself so seriously such an attitude is to be expected. At all events his theories may now be regarded as the talk of the town among those who are concerned with birth restriction and functional sterility.

It seems that in 1924 Professor Knaus undertook research work on the pharmacology and physiology of uterine muscle under Professor A. J. Clark in London, and that the next year he continued his work at Cambridge. His investigations led to the study of the corpus luteum as a gland of internal secretion and in 1927 he advanced the idea that a lutein hormone produces a typical reaction in the uterine mucosa and muscle—hypotonia, swelling and non-responsiveness to pituitrin. Having demonstrated this reaction in rabbits to his own satisfaction he found that the same rule seemed to hold for the human uterus. By means of a water filled balloon in the uterus connected with a kymograph he claims in normal women with regular periods to have fixed the time of ovulation. He found that the changes in the uterus registered by the instrument occurred sharply and always at a fixed time in the menstrual cycle. His ability to determine the moment of extrusion of the unfertilized ovum from a ripened Graafian follicle is the pivotal point in Knaus's theory, first advanced by him in 1929.

In accepting Knaus's theory of periodic fertility and sterility the following biological facts must be agreed to: (1) The life of the unfertilized ovum after ovulation is extremely brief—not longer than twenty-four hours in the human being; (2) The viability of human spermatozoa within the genital tract or abdomen of the female is not much longer—forty-eight hours at the most; (3) "The corpus luteum metoestrum in normal woman has an autonomous function regularly lasting fourteen days"; (4) Ovulation in women who menstruate regularly always normally occurs on the same relative day of each menstrual cycle—on the fifteenth day before the onset of menstruation.

If these statements are true the period of each menstrual cycle during which women are fertile and can therefore become impregnated is definite and relatively short—only three days. In practice however, for sake of additional safety, the fertile period is regarded as extending over five days, and in theory at least it becomes necessary for women desiring to avoid pregnancy to abstain from coitus only dur-

ing these few days. Knaus maintains that at any other time in the month it is impossible for them to conceive. As this rule applies only in cases of absolute regularity of menstruation such factors as illness, pregnancy, and change of climate have to be allowed for and in instances of irregular menstruation much more extreme limits have to be fixed and adhered to. In fact all of the reported failures in those who have attempted to follow Knaus's rules are explained by him on the basis of miscalculations due to faulty knowledge concerning the length and rhythm of the particular menstrual cycle. Great care is enjoined on all women who are desirous of applying Knaus's rules in their sexual life to begin by observing and recording the first day of their menstrual cycle over a period lasting at least a year, such data being essential in determining what type of menstrual cycle characterizes the particular individual. To assist in this most important part of his plan the author provides his patients with specially aranged menstrual calendars.

In substance Professor Knaus claims that a woman who menstruates regularly every twenty-eight days will ovulate on the fifteenth day before the onset of her next expected period. Assuming this to be the fifteenth of June she may regard June twelfth to the sixteenth inclusive as the only days of that month upon which coitus will be followed by conception, and if she be the average normal woman that result is practically assured if intercourse is practised during these five days of fertility.

Assuming the case of another woman who menstruates at a regular interval of twenty-six to twenty-nine days, ovulation occurs each month between the twelfth and fifteenth days of the cycle inclusive and this constitutes what has been called "the ovulation period." When the two days preceding the ovulation period are added in and an additional day allowed for at the beginning and end of the whole time we find that the fertile period (ninth to fifteenth day inclusive) in this case is extended to eight days.

If this theory of periodic fertility and sterility is true it makes unnecessary the elaborate contraptions of the contraceptive clinic and puts the control of conception upon a surer basis than now exists. By following such methods it has been suggested that not only may childbirth be controlled in a more acceptable way even to present opponents of the practice but that cases of supposed sterility may often be corrected. It still remains to be proved beyond peradventure of a doubt whether or not Professor Knaus's theory is true.

Delegate Hobson's Bill.

Some time ago the Richmond *Times-Dispatch* took occasion editorially to call our attention to Delegate Haskins Hobson's bill for the creation out of public funds of an institution in this state for the treatment of alcoholic addicts. The measure was defeated at the 1932 session of the General Assembly but the newspaper states the author is contemplating reintroducing it next year. It labels the bill "a thoroughly meritorious one" and believes it "should command the support of both wets and drys." The editorial speaks glibly of "modern corrective treatment" and of returning the patients "to their several communities morally and physically rehabilitated, fitted for the serious work of good and useful citizens." It evinces considerable horror that the state should continue to care for chronic alcoholism in "the alcoholic wards of an asylum for the insane."

In dealing with this question it is unfortunate that our lay writer does not employ the Virginia statutory title by which our state institutions are designated. We may be forgiven for reminding him that we no longer have asylums for the insane in Virginia. Each of our institutions is called a hospital—for example, there is the Central State Hospital, the Western State Hospital, etc.—and each is supposed to be conducted upon the high scientific plane that that title implies.

The second mistaken idea that seems to underlie the *Dispatch's* praise of Delegate Hobson's bill is the mediaeval conception that mental disease is something horrible, something to shun, or be ashamed of. From what we can make out the writer is afraid the "insane" may do something to the alcoholic. The impression is given that the nice sufferer from chronic alcoholism may be harmed by contact with the disreputable victim of mental disease. As a matter of fact quite the opposite is possible.

There is nothing to be ashamed of in inherited mental disease. We might be justified in showing less patience for acquired mental disease. So-called "insanity," drug addiction, alcoholic addiction, all are forms of mental disease, and the sufferer from

each is to be pitied, not scorned, shunned and scandalized.

At present about 500 of the state sufferers from alcoholic addiction are being taken care of annually at one of our state hospitals. If they are not being properly taken care of, mere isolation will not solve the difficulty. They would still be under the supervision of a lay board. There is much room for improvement in the care of all our mental wards in the State of Virginia. The fault lies not in the medical profession but in the pitiful fact that politics and lay bodies now mold the destinies of our 10,000 mental patients.

After Fifty Years.

The eleventh annual meeting of the American Association of the History of Medicine was dedicated to the memory of an American physician of genius and self-sacrificing devotion to an idea—Joseph P. O'Dwyer. There are few of us who do not know that O'Dwyer invented an improved and perfected laryngeal intubation tube, a life saving device in laryngeal diphtheria. Before O'Dwyer's time laryngeal diphtheria exacted a fearful toll of the infant and child population. His invention brought hope and relief where formerly there had been none.

O'Dwyer was born in Cleveland, Ohio, in October, 1841. He graduated in medicine from the College of Physicians and Surgeons in New York City in 1866. He twice contracted cholera while attempting to stem the ravages of cholera epidemics. His work on laryngeal diphtheria and its treatment by intubation began with his appointment to the staff of the New York Foundling Hospital in 1872. Painstaking studies on numberless plaster casts of larynx and trachea, repeated trials and failures with tubes of various materials and various shapes in a search for one that would not be irritating, that would not slip into the trachea, that could not be expelled by coughing, and into which food and liquid could not be aspirated—by such a course he arrived at the successful invention which he described for the first time fifty years ago, and for which today we take occasion to acknowledge our indebtedness to him.

Department of Clinical and Medical Education of the Medical Society of Virginia

Postgraduate Clinics.

The Fifteenth Postgraduate Clinic was conducted at the University of Virginia Hospital in coöperation with the Department of Clinical and Medical Education of the Medical Society of Virginia, in accordance with the previously announced program. Forty-six physicians, in addition to members of the Medical School and Hospital staffs attended. They came from as distant posts as Emory in the Southwest and Newport News in the East. Hospital officials report that this was one of the most, perhaps the most, successful of the postgraduate clinics conducted at the University of Virginia. The names and addresses of the physicians who registered for the clinic are as follows:

Dr. W. C. Archer, Waynesboro.
Dr. J. B. Bailey, Keysville.
Dr. H. L. Baptist, Ivy Depot.
Dr. G. B. Barrow, Staunton.
Dr. N. Bloom, Richmond.
Dr. R. E. Booker, Lottsburg.
Dr. Glenn C. Campbell, Staunton.
Dr. C. C. Canada, Staunton.
Dr. F. T. Cassidy, Fredericksburg.
Dr. E. M. Chitwood, Wytheville.
Dr. John E. Cole, Fredericksburg.
Dr. Lee Cooke, Fredericksburg.
Dr. J. C. Coulter, Charlottesville.
Dr. H. S. Daniel, Louisa.
Dr. E. D. Davis, Jr., Crozet.
Dr. Clive O. Dearmont, White Post.
Dr. C. G. Grazier, U. S. Navy.
Dr. Percy Harris, Scottsville.
Dr. H. T. Hawkins, Waynesboro.
Dr. R. L. Hillman, Emory.
Dr. Lewis Holladay, Orange.

Dr. H. B. Holsinger, Farmville.
Dr. J. F. Hubbard, Waynesboro.
Dr. D. M. Kipps, Front Royal.
Dr. W. A. Kyger, Free Union
Dr. Anita Lotti, Charlottesville.
Dr. W. R. Martin, Charlotte C. H.
Dr. S. G. Miller, Piney River.
Dr. G. L. Morriss, Victoria.
Dr. J. O. Mundy, Charlottesville.
Dr. W. A. Murphy, Staunton.
Dr. Marshall J. Payne, Staunton.
Dr. B. A. Rice, Forest.
Dr. L. G. Roberts, Moorman's River.
Dr. Alex. F. Robertson, Jr., Staunton.
Dr. Chas. W. Scott, Newport News.
Dr. J. H. Scherer, Richmond.
Dr. Elizabeth B. Sherman, Front Royal.
Dr. J. F. Thaxton, Tye River.
Dr. W. H. Turner, Round Hill.
Dr. A. E. Turman, Richmond.
Dr. H. M. Wallace, Staunton.
Dr. W. R. Warren, Woodberry Forrest.
Dr. Chas. E. Watson, Broadway.
Dr. J. A. Wolfe, Staunton.
Dr. F. J. Wright, Petersburg.

The Christiansburg Medical Society has under way plans for a postgraduate clinic in Pediatrics which is to begin later in the year.

GEORGE B. ZEHMER, *Executive Secretary.*

Proceedings of Societies

The Postgraduate Medical Society of Southern Virginia

Met in conjunction with the Department of Clinical Education of the Medical Society of Virginia in the courthouse at Surry on the afternoon of Tuesday, May 7th. The president, Dr. H. E. Whaley, of Victoria, presided. The secretary-treasurer, Dr. C. E. Martin, of Emporia, reported all bills paid to date and a satisfactory response on the part of members relative to their financial obligations to the Society.

Several interesting case reports were submitted which were discussed by Drs. R. L. Raiford, W. W. Seward, A. S. Graham, J. E. Rawls and others.

Dr. Hyman Cantor, of Petersburg, presented a paper on "Acute Perforation of Gastric Ulcer"; Dr. R. L. Raiford, of Franklin, presented a paper on "The Use of Plaster Splints in Treating Fractures." The invited guest, Dr. A. Stephens Graham, of Richmond, gave a most instructive talk on "The Colon," considering its embryology, physiology and pathology, followed by a resumé of the various neoplastic lesions commonly found in various parts of the colon with an outline of modern methods of diagnosis and treatment.

At the business session which followed the scientific program, Dr. A. T. Brickhouse, of Hopewell, was elected to membership. Dr. F. E. Steere, of Claremont, was elected delegate and Dr. W. W. Seward, of Surry, alternate to represent the county of Surry at the Norfolk meeting of the Medical Society of Virginia.

The next meeting of the Postgraduate Society will be held in Emporia, at 2:30 P. M., Tuesday, August 27th.

The Mid-Tidewater Medical Society

Met at Saluda, Va., on April 23rd, for its regular quarterly meeting with about thirty members and guests in attendance. Dr. E. L. W. Ferry, of Millers Tavern, presided and Dr. M. H. Harris, of West Point, was at the secretary's desk.

Several matters of business were attended to at the morning session, and the following resolution was adopted:

WHEREAS, It has been brought to the attention of the Mid-Tidewater Medical Society, composed of the counties of Essex, Middlesex, Gloucester, Mathews, York, New Kent, King William and King and Queen, that the clinics at the Medical College of Virginia and at the University of Virginia are treating many cases that are not indigent;

BE IT RESOLVED, That the Mid-Tidewater Medical Society asks the cooperation of these two clinics in checking this unfair and uncalled for competition, and that a requirement for treatment shall be a written request from the family doctor, before receiving treatment;

FURTHER BE IT RESOLVED, That a copy of this resolution be sent to the head of each clinic and a copy be reported to the Medical Society of Virginia publication.

Between the morning and afternoon sessions, a delicious dinner was served by the physicians of the county of Middlesex to the members and guests.

At the afternoon session papers were given by Dr. Fred M. Hodges, of Richmond, on "Treatment of Cancer with X-ray and Radium." This was illustrated with slides, showing the improvement and benefit, with disfigurement. Dr. Guy W. Horsley, also of Richmond, read a paper on "Report of Five Hundred and Two Cases of Appendicitis at St. Elizabeth's Hospital between January 1, 1931 and December 31, 1933." Both papers were discussed and many questions were answered.

The next meeting will be held at Gloucester in July.

The Virginia Society of Oto-Laryngology and Ophthalmology

Held its sixteenth annual meeting at the Stratford Hotel, Fredericksburg, Va., on May 4th. The president, Dr. Beverley R. Kennon presided. The mayor of Fredericksburg, Dr. R. J. Payne, welcomed the members to the city. There were thirty-nine in attendance. Among the invited guests were Drs. Ben Witt Key and M. C. Myerson, of New York, who presented interesting papers. Other prominent men on the program were Drs. H. S. Hedges, Fletcher D. Woodward, E. T. Gatewood, M. H. Hood, F. H. McGovern, and Orvin C. Jones.

The Society decided to sponsor another Postgraduate Course at the University of Virginia this year.

The following officers were elected for the ensuing year: President, Dr. Emory Hill, Richmond; vice-president, Dr. J. Minor Holloway, Fredericksburg, and secretary-treasurer, Dr. George G. Hankins (re-elected), Newport News. The next meeting will be held in Richmond, Va., in May, 1936.

Nansemond County Medical Society.

At the March meeting of this Society Dr. E. C. Joyner was re-elected president for the ensuing year and Dr. William F. Wild was elected secretary. Both are of Suffolk.

The Society was addressed by Dr. J. Shelton Horsley, of Richmond, at its meeting on April 6th, his subject being "Cancer of the Stomach and Intestines."

Dr. William B. Porter, of the Department of Medicine, Medical College of Virginia, spoke at the meeting on May 9th.

The Amelia County Medical Society

Held a regular meeting at Amelia C. H. on May 6th, at which time the following officers were elected for the ensuing year: Dr. James L. Hamner, Mannboro, president; Dr. G. C. Eggleston, Amelia, vice-president; and Dr. James L. Hamner, secretary-treasurer.

Dr. J. M. Habel and Dr. H. C. Rucker were elected delegate and alternate, respectively, to the State meeting to be held in Norfolk this fall. Upon the request of Governor Peery, Dr. J. M. Habel and Dr. J. L. Hamner were selected as delegates to the Statewide Safety Conference to be held in Richmond, May 15th and 16th.

The South Piedmont Medical Society

Held its semi-annual meeting at Danville, Va., April 23rd, under the presidency of Dr. George A. Stover, South Boston. There was a symposium on "Medical Economics" in addition to several papers on other subjects, and the program was most interesting.

The following officers were elected for the ensuing year: President, Dr. J. J. Neal, Danville; vice-presidents, Dr. H. R. Bourne, Danville; Dr. George T. Harris, Lynchburg; Dr. C. B. White, Halifax; Dr. H. C. Chalmers, Phenix; and secretary-treasurer, Dr. J. A. Owen (re-elected), Turbeville. The next meeting will be held in South Boston on Tuesday, November 26, 1935.

The Southampton County Medical Association

Met in the office of Dr. E. A. de Bordnave, Franklin, Va., on the afternoon of April 11th. The meeting was called to order by Dr. John N. Applewhite, president. In the absence of Dr. W. T. McLemore, Dr. R. L. Raiford acted as secretary *pro tem*. There was no business to be considered and the reading of the minutes of the last meeting was dispensed with.

Dr. Ambrose McGee, of Richmond, addressed the meeting on "Some of the Feeding Problems of Children," after which a general round table discussion was entered into. There was much interest

shown and all present expressed the opinion that this was one of the best meetings of the Society.

The Roanoke Academy of Medicine

Held its fourth hospital meeting at the Roanoke Hospital, Monday evening, April 29th, at which time the following scientific program was presented:

1. Carcinoma of Thyroid—Dr. L. D. Keyser.
2. Torsion of Omentum—Dr. T. D. Armistead.
3. Glycocoll Therapy in Muscular Dystrophy—Dr. L. Davis.
4. Continuous Irrigation in Peritonitis—Dr. J. P. Kent and Dr. C. M. Irvin.
5. Carcinoma of Penis—Dr. S. M. Novak and Dr. T. D. Armistead.
6. Poly-Orchidism with Malignancy in the Supernumerary Testicle—Dr. W. L. Powell and Dr. L. D. Keyser.

Dr. W. P. Jackson and Dr. Frank Helvestine, Jr., both of Roanoke, are president and secretary, respectively.

The Physicians Journal Club of the Eastern Shore of Virginia

Held its regular meeting at Accomac, Va., on May 14th. At this time, interesting papers were presented by Dr. Southgate Leigh, Jr., Norfolk, on Minor Surgery, and by Dr. Ira Hurst, Parksley, on The Treatment of Diabetes by the High Carbohydrate-Low Fat Diet.

Though the two counties on "The Shore" have independent organizations, the Journal Club has been an excellent means for getting together the profession of that section and for promoting a splendid feeling of good will between the doctors of the two counties.

News Notes

American Medical Association.

The 86th annual session of the Association is to be held at Atlantic City, N. J., June 10th-14th. Dr. Walter L. Bierring, of Des Moines, Iowa, is president and Dr. James S. McLester, of Birmingham, Ala., will succeed to the presidency at this time. This session gives promise of being one of the most interesting and pleasant in the history of the organization as for the first time in its history there is to be a joint session with Canadian Medical Association.

The House of Delegates will convene on Monday, the 10th, at 10:00 A. M., and the Scientific Assembly will open with the General meeting on Tuesday, the 11th, at 8:30 P. M. Several entertainments and group dinners will add much to the social interest of this session.

Norfolk Meeting of State Society.

The local committee in charge of arrangements for the Norfolk meeting of the Medical Society of Virginia has been working on details for the meeting to be held in that city on October 15th, 16th and 17th. The Monticello will be hotel headquarters and all sessions and exhibits will be held there. As far as possible, members should make early reservations to insure securing accommodations in the hotel of their choice. This session promises to keep up the reputation made by Norfolk as a fine meeting place.

The Program Committee of the Society hopes to have an attractive program for announcement at an early date.

State Child Conservation Committee Formed.

Upon the invitation of Dr. W. P. Jackson, Chairman of the Child Welfare Committee of the Medical Society of Virginia, and Miss Ellen H. Smith, Chairman of the Child Hygiene Committee of the Cooperative Education Association, Virginia Parents and Teachers, a number of child hygiene and child welfare committees of Statewide Associations met in Richmond on April 3rd to coordinate their efforts, forming the *State Child Conservation Committee.* The organizations and associations represented in this group are: The Medical Society of Virginia, with Dr. W. P. Jackson as chairman; the Virginia Tuberculosis Association, with Dr. Dean B. Cole as Chairman; the Virginia Pediatric Society, with Dr. J. B. Stone as chairman; the Cooperative Education Association, Virginia Parents and Teachers, with Miss Ellen H. Smith as chairman; the Virginia Education Association, with Mr. J. M. Shue as chairman; the State Superintendents

Association, with Mr. W. A. Scarborough as chairman.

Virginia's status among the states of the nation, and particularly the Southern States, was considered by this group and it was concluded that, in health measures, affecting particularly the welfare of mothers and children as well as the protection of all citizens, Virginia was not maintaining her place even among the Southern States.

Miss Smith indicated the five outstanding points which needed the attention of the group as:

1. Correction of certain remediable physical defects of indigent school and pre-school children: vision, tonsils, adenoids, teeth, and immunization for them.
2. Better facilities for the early diagnosis and early treatment of tuberculosis.
3. Better obstetrical service.
4. Venereal disease control.
5. Provision for a continuous postgraduate service to Virginia practicing physicians.

Committees were appointed to consider these recommendations and to report to the State Child Conservation Committee at a meeting in Richmond on June 1st. Indications are that requests for necessary funds to support these measures will be carried to the Legislature.

New Health Officers Appointed.

Dr. J. B. Porterfield has been appointed health officer of Montgomery County with headquarters at Christiansburg, Va., the appointment having become effective May 1st. He is a graduate of the University of Virginia, class of '33, and interned at the Toledo Hospital, Toledo, Ohio.

Dr. Linwood Farley, who has been practicing for some time at Courtland, Va., has been assigned to the Southwest Health District as assistant to Dr. Edgar C. Harper, deputy director of rural health in that area, with headquarters at Abingdon. Dr. Farley's appointment became effective May 1st.

Dr. George E. Waters, of the class of '33, University of Virginia, who later interned at the Baltimore City Hospital, has been appointed acting director of the Peninsula Health District, effective May 6th. He succeeds Dr. C. H. Dawson resigned. This district is composed of the counties of James City, Elizabeth City, Warwick and York, with headquarters at Williamsburg.

All of the new health officers named above recently completed courses in Public Health at Johns Hopkins University and have been engaged in health work in Maryland.

The Virginia Academy of Science

Held its annual meeting at the University of Richmond early in May with an attendance of over 400. The sessions were both interesting and instructive. The Academy's Committee on research, headed by Dr. J. Shelton Horsley, announced that Miss Margaret Hess, University of Virginia graduate, won the Academy's prize for the best paper presented during the year. This was based on research done in the department of biology at the University. Research grants were awarded the following: Dr. J. W. Beams, of the University of Virginia; W. B. Bell, Virginia Polytechnic Institute; Dr. Walter S. Flory, Bridgewater College; Dr. H. B. Haag, Medical College of Virginia; Dr. C. C. Speidel, University of Virginia; and Dr. Edward Steidtmann, of the Virginia Military Institute.

Dr. Ida Sitler, head of the Hollins College science department, took office as president for the coming year, succeeding Dr. W. T. Sanger, president of the Medical College of Virginia. Dr. H. E. Jordan, of the University of Virginia, was named president-elect, and Dr. E. C. L. Miller, Medical College of Virginia, was re-elected secretary-treasurer. The 1936 meeting will be held at the Virginia Military Institute, Lexington, Va.

University of Virginia Hospital, School of Nursing,

Held its Commencement Exercises in Madison Hall, at the University on May 9th. The graduates, who were awarded their diplomas by President John L. Newcomb, were presented by Dr. J. Carroll Flippin, Dean of the School of Medicine. Following the presentation of University Hospital Alumnae Pins by Dr. John H. Neff, the graduates were addressed by Dr. Frank A. Geldard.

After the ceremonies a tea was tendered the graduates who numbered fifty-eight including ten transfers from the Mary Washington Hospital, Fredericksburg, eleven from Sheltering Arms Hospital, Richmond, four one-year affiliates each from Blue Ridge Sanatorium and from Catawba. The Mary Washington and the Sheltering Arms students were transferred to the University when their Schools of Nursing were closed.

Married.

Dr. Virgil O. Choate, Galax, Va., and Miss Millie S. Gilbert, Patrick Springs, Va., April 18th.

Dr. Clarence Porter Jones, Jr., formerly of Newport News, Va., and Miss Selma Schrunk, of Sacramento, Calif., April 25th. Dr. Jones is a member of the class of '34, Medical College of Virginia, and is at present interning at the Southern Pacific General Hospital, San Francisco. On July 1st he goes to Mater Misericordiae Hospital, Sacramento, as House Surgeon, and on October 1, 1936, to Chicago for a residency in obstetrics and for graduate work in the University of Chicago.

Dr. John A. Payne, III, Medical College of Virginia, class of '33, who interned at St. Vincent's Hospital, Norfolk, and Miss Mary Mundy, April 30th. They will be located at Sunbury, N. C., where Dr. Payne will be engaged in general practice.

Dr. Thomas Archer Gibson, Winchester, Va., and Miss Helen Hawke, Clifton Heights, Pa., in May, 1935, at Radnor, Pa.

Dr. Thomas F. Wheeldon,

Richmond, Va., was recently elected secretary-treasurer of the Harvard Club of Virginia, at its meeting in this city.

Mead Johnson Vitamin A Research Award.

In January, 1932, Mead Johnson & Company announced an award of $15,000 to be given to the investigator or group of investigators producing the most conclusive research on the vitamin A requirements of human beings. Judges for the award are: Issac A. Abt, Northwestern University; K. D. Blackfan, Harvard University; Alan Brown, University of Toronto; Horton R. Gasparis, Vanderbilt University; H. F. Helmholz, Mayo Clinic; Alfred F. Hess, Columbia University; E. V. McCollum, Johns Hopkins University; L. B. Mendel, Yale University; L. T. Royster, University of Virginia; and Robert A. Strong, Tulane University.

In February, 1933, the Judges decided on an additional award of $5,000 for a laboratory investigation which may have been published that will point the way toward clinical evaluation of the subject.

At a meeting in April, 1935, the Judges decided to postpone until December 31, 1936, awarding of the main (Clinical) award, and to divide the second (Laboratory) award, one-half to Dr. S. B. Wolbach, Harvard University, and one-half to Dr. Karl E. Mason, Vanderbilt University for their original work.

Doctors on Committees.

Dr. W. M. Phipps and Dr. D. Lane Elder, Hopewell, Va., have been appointed by the president of the Hopewell Chamber of Commerce as members of committees of that organization.

Brooklyn-Long Island Doctors Visit Richmond.

Fifty-one members of the Brooklyn-Long Island Chapter of the American College of Surgeons visited Richmond on Saturday, May 11th. Operative Clinics were held for the visitors at St. Luke's, St. Elizabeth's, Memorial, and St. Philip Hospitals, and also a Dry Clinic in the Egyptian Building of the Medical College of Virginia. After this, luncheon was served in Cabaniss Hall which is connected with Memorial Hospital.

In the afternoon clinical lectures and talks were delivered in the Auditorium of the Richmond Academy of Medicine Building, following which there was a tea for the visitors at the residence of Dr. and Mrs. J. Shelton Horsley in Westmoreland Place.

In appreciation of the program arranged by the local doctors, the visiting surgeons entertained with a dinner at the John Marshall Hotel to which were invited Dr. W. T. Sanger, President of the Medical College of Virginia; Dr. Fred P. Fletcher, President of the Richmond Academy of Medicine; and all of the local men appearing on the program. Dr. J. E. Jennings, of Brooklyn, was toastmaster, and appropriate talks were made by Drs. J. Shelton Horsley, Sanger, and Carrington Williams.

Honor for Dr. Fitzgerald.

Dr. J. O. Fitzgerald, Jr., Richmond, Va., was recently elected to membership in the American Congress of Physical Therapy.

Medical College of Virginia News.

The following men have been appointed to the faculty of the college:

Dr. A. M. Ambrose, Associate in Pharmacology.

Dr. E. L. McQuade, Associate in Preventive Medicine.

Dr. W. A. Browne, Instructor in Preventive Medicine.

Dr. T. Stanley Meade, Instructor in Pediatrics.

Dr. L. S. Meriwether, Instructor in Neuropathology and Neurological Surgery.

Dr. P. Harrison Picot, Instructor in Gynecology.

Dr. Charles R. Robins, Jr., Instructor in Gynecology.

Dr. Vernard Benn, Assistant in Pediatrics.

Dr. Nathan Bloom, Assistant in Medicine.

Dr. E. O. Coleman, Assistant in Surgery.

Dr. Karl M. Lippert, Assistant in Surgery.

Dr. W. T. Oppenheimer, Jr., Assistant in Radiology.

Dr. L. L. Shamburger, Assistant in Obstetrics.

Dr. L. B. Todd, Assistant in Ophthalmology and Otolaryngology.

Promotion from instructors to associates were as follows:

Dr. James P. Baker, Jr., Associate in Medicine.

Dr. A. Stephens Graham, Associate in Surgery.

Dr. Guy Horsley, Associate in Surgery.

Dr. W. R. Southward, Associate in Surgery.

Dr. Rudolph Thomason, Associate in Ophthalmology.

Dr. W. T. LaNeave, Jr., was promoted from assistant to instructor in surgery, and Dr. C. W. Morhart, school of dentistry, was promoted from instructor to associate in prosthetic dentistry.

The regular scientific monthly meeting of the faculty and staff was held May 9th with the following program:

Production of Experimental Arthritis in Animals—by Dr. J. C. Forbes and Mr. R. C. Neal.

The Chemical Structures of the Hormones—by Dr. Sidney S. Negus.

Dr. C. C. Coleman reported on three cases: Colloid Cyst of the Third Ventricle, Cerebral Angiogram for Diagnosis of Intracranial Aneursym, and Neumococcic Meningitis from Petrous Abscess.

The April report for the out-patient department shows 5,565 patient visits, made by 2,575 individual patients.

Commencement exercises of the 97th session of the College were held the last of May. A report on these, with a list of medical graduates and hospital appointments will appear in the July issue of the MONTHLY.

News from University of Virgina, School of Medicine.

At the initiation meeting of the University of Virginia Chapter of Sigma Xi on April 24th, the eleventh annual award of the President and Visitors' Research Prize of $100 was given to Dr. Alfred Chanutin, Professor of Biochemistry, for his paper "Experimental Renal Insufficiency Produced by Partial Nephrectomy."

On April 29th, Dr. Gunnar Nyström, of Uppsala University, Sweden, visited the Medical School.

For the second time the New York Academy of Medicine has awarded the Edward N. Gibbs Prize to Dr. Alfred Chanutin. The Prize has the value of $700 and must be used for studies on renal function.

On May 14th, Dr. H. B. Mulholland, Dr. J. Edwin Wood and Dr. Alfred Chanutin conducted a Symposium on Kidney Function and Disease before the Richmond Academy of Medicine.

On May 2nd to 4th, Dr. D. C. Smith attended the annual meeting of the American Dermatalogical Association at White Sulphur Springs, W. Va. Dr. Smith was elected to the vice-presidency of the Association for next year.

The graduation exercises of the University of Virginia Hospital Training School for Nurses were held on the afternoon of May 9th. Fifty-eight nurses received their diplomas. The address to the graduates was given by Professor Frank A. Geldard, who spoke on the subject of The Influence of Suggestion.

The Fifteenth Postgraduate Clinic conducted by the University of Virginia Hospital on May 10th was attended by forty-six physicians.

On May 9th, Dr. H. B. Stoner, of Burroughs Wellcome and Co., spoke to the fourth year class on Opportunities in Medical Research.

Dr. Karl Meyer, Director of the Hooper Foundation and Professor of Bacteriology in the Medical School of the University of California, visited the Medical School on May 13th.

News from Duke University School of Medicine.

During the month of April, Dr. Angus McBryde, Assistant Professor of Pediatrics, exchanged with Dr. Katherine Dodd, Associate Professor of Pediatrics at Vanderbilt University School of Medicine.

On April 2nd, Dr. R. A. Ross addressed the Parent-Teacher's Association of Efland, N. C., on the subject of Maternal Care, and on May 13th, he addressed the meeting of the Ladies Auxiliary of the American Legion of Durham on the same subject.

On April 9th, Dr. Bayard Carter gave a paper on The Non-Convulsive Toxemias of Pregnancy before the Eighth District Medical Society which met at Asheboro, N. C.

On April 24th, Dr. E. K. Marshall, Jr., Professor of Pharmacology and Experimental Therapeutics gave a lecture in the hospital amphitheatre on Oxygen Therapy.

At the meeting of the Durham-Orange County Medical Society in the hospital amphitheatre April 26th, Dr. Richard Kovacs, of New York City, gave an illustrated lecture on The Present Status of Physical Therapy in the Practice of Medicine.

On April 27th, Dr. Seale Harris, of Birmingham, Ala., gave a clinic in the hospital amphitheatre on Diabetes.

On May 6th, Dr. Wm. T. Davis, Professor of Ophthalmology at the George Washington University School of Medicine, gave a clinic in the amphitheatre on Refractive and Non-Refractive Asthenopia.

On May 6th, Dr. J. P. Pratt, Obstetrician and Gynecologist-in-Chief of the Henry Ford Hospital, Detroit, gave an operative clinic in the amphitheatre and a formal clinic on May 7th. His paper was on Recent Studies of the Human Corpus Luteum.

On May 6th, Dr. Bayard Carter spoke on What Constitutes Adequate Maternity Care before the Ladies Auxiliary of the American Legion at Oxford, N. C.

On May 8th, Dr. R. A. Ross gave a paper on The Paradoxes of Eclampsia before the Section of Obstetrics and Gynecology at the North Carolina State Medical Society meeting at Pinehurst, N. C.

Dr. Charles R. Robins, Jr.,

Has recently returned to Richmond, Va., and has been elected a member of the Surgical Staff of Stuart Circle Hospital. He graduated from Medical College of Virginia in 1929 and served an internship at Stuart Circle Hospital, this city, in 1929-30, after which he attended courses under Prof. Dr. Beitshe in the University of Graz in Austria. Returning to the States, Dr. Robins had a fellowship in surgery at the Mayo Clinic for 1931-34, and for the past year has been first assistant to Dr. Charles W. Mayo.

Dr. William A. Farmer,

Formerly a resident physician at the Medical College of Virginia Hospital, Richmond, later going to the American Hospital in Paris, has returned and has located at Anderson, S. C., where he will be engaged in general surgery.

Dr Philip E. Rossiter,

In 1930 and 1931 medical officer of the James River Fleet, with headquarters at Lee Hall, Va., later going to Chemung, N. Y., has now been transferred to the Veterans Hospital, Bath, N. Y.

Dr. William F. Bryce, Jr.,

Class of '34, Medical College of Virginia, who has been serving an internship at the Medical College of Virginia Hospitals, Richmond, has received an appointment in ophthalmology at the Mayo Clinic, and will enter upon his new duties on July 1st.

Dr. C. C. Freed,

Waynesboro, Va., was elected president of the Rotary Club of that city, at the meeting early in May.

Dr. D. E. Watkins was program chairman for this meeting.

The New Veterans' Hospital,

Roanoke, Va., was opened for the reception of patients on April 23, 1935. This hospital is primarily a hospital for the treatment of nervous and mental disorders. A limited number of beds is available for the reception of veterans eligible for, and in need of emergency hospitalization for surgical and medical disabilities.

Physicians throughout the state are kindly requested not to refer veterans to this hospital without first ascertaining that a bed is available and that eligibility of the veteran to receive treatment has been established.

The medical staff consists of the following medical officers: Dr. L. E. Trent, Chief Medical Officer; Dr. C. T. Wilfong, Chief, Out-Patient Clinic; Dr. R. L. Eltinge, Dr. Paul M. Jerrell, Dr. H. B. West, Dr. D. P. Stearns, Dr. Lucian C. Smith, Dr. Fred F. Oast, Dr. C. E. Clay, Dr. H. W. Kennard, Dr. E. M. Hasbrouck, Dr. J. E. Neilon.

The following named physicians have been appointed as Consulting Specialists: Dr. Hugh S. Trout, Roanoke, Va., Consulting Surgeon; Dr. G. M. Maxwell, Roanoke, Va., Consulting Eye, Ear, Nose and Throat Specialist; Dr. J. T. McKinney, Roanoke, Va., Consulting Roentgenologist; Dr. L. D. Keyser, Roanoke, Va., Consulting Surgeon; Dr. W. L. Powell, Consulting Internist; Dr. Churchill Robertson, Roanoke, Va., Consulting Internist; Dr. John O. Boyd, Roanoke, Va., Consulting Internist; Dr. Thos. N. Spessard, Roanoke, Va., Consulting Neuropsychiatrist; Dr. D. P. Scott, Lynchburg, Va., Consulting Internist; Dr. S. Beverly Cary, Roanoke, Va., Consulting Specialist in Genito-Urinary Diseases; Dr. Hugh Hagan, Roanoke, Va., Consulting Internist.

Dr. W. Fredric Delp,

Of the '34 class, Medical College of Virginia, who interned at the University Hospital, Ann Arbor, Mich., is opening offices for general practice in the Crowell Building, Pulaski, Va.

Dr. Clarence Porter Jones,

Newport News, Va., addressed the Eye, Ear, Nose and Throat Section of the Norfolk County Medical Society, April 29th. His subject was "Some Problems of Mutual Interest to Specialists and Practitioners."

Foods and Nutrition.

An interesting and instructive booklet on food values and nutrition, covering particularly the newer knowledge of vitamin and mineral metabolism, has been prepared by the R. B. Davis Company, the makers of Cocomalt. Charts showing the relative content of vitamins, calcium, phosphorus, and total caloric value of the most common foods are presented.

This may be secured without cost on request to R. B. Davis Company, Dept. 000, Hoboken, N. J.

The Gill Memorial Eye, Ear and Throat Hospital

Recently completed its Ninth Annual Spring Graduate Course with a total registration of sixty-five doctors. Sixty doctors were refused admission due to lack of accommodations.

The following visiting doctors delivered lectures:

Dr. Oscar V. Batson, Philadelphia, Pa.
Dr. William V. Mullin, Cleveland, Ohio.
Dr. Lyman Richards, Boston, Mass.
Dr. John A. Kolmer, Philadelphia, Pa.
Dr. Harry S. Gradle, Chicago, Ill.
Dr. Ben Witt Key, New York City, N. Y.
Dr. Ralph I. Lloyd, Brooklyn, N. Y.
Dr. A. B. Reese, New York, N. Y.

The program next year will be given the second week in April.

Dr. C. Curtis Hatfield,

Class of '34, Medical College of Virginia, who interned at St. Vincent's Hospital, Erie, Pa., has located at Saltville, Va., where he will engage in general practice.

Army Doctors Transferred.

Dr. C. L. Neale, recently at Tripler General Hospital, Honolulu, Hawaii, has been transferred to Fort Sam Houston, Texas, where he will be engaged in gynecological and obstetrical work. He has recently been visiting his former home in Virginia.

Dr. C. L. Brothers, who was stationed at Schofield Barracks, Hawaii, has been transferred to Kelly Field, Texas, for duty.

Dr. John R. Wood, who has been at Manila, P. I., has been ordered to Walter Reed General Hospital, Washington, D. C.

All three of these doctors are members of the class of '28, Medical College of Virginia, and are now captains in the Medical Corps of the U. S. Army.

Dr. W. N. Breckinridge,

Fincastle, Va., was recently re-elected chairman of the Botetourt County Democratic committee.

Dr. James S. Dryden,

Recently of Jeffs, Va., has moved to Oakland, Md., having been appointed as physician to the CCC Camp at that place. He is a member of

the class of '33, Medical College of Virginia and later interned at St. Vincent's Hospital, Norfolk, Va.

Dr. Bernard C. Grigsby,

Class of '33, Medical College of Virginia, who has recently been located at Quinwood, W. Va., has moved to Bonny Blue, Va., where he is associated with Dr. C. H. Henderson.

Dr. T. R. Boling,

Class of '31, Medical College of Virginia, recently of Grantsville, W. Va., has been appointed acting surgeon with the U. S. Public Health Service. He entered upon his new duties on May 5th, at the U. S. Quarantine Station, San Juan, Porto Rico.

Dr. F. T. Renick,

Recently of Crozet, Va., has located at Grantsville, W. Va., for general practice. He graduated from the Medical College of Virginia in 1931.

The Southside Virginia Medical Association

Is to hold its regular quarterly meeting in Lawrenceville, on Tuesday, June 11th. Dr. S. E. Gunn, Hopewell, is president, and Dr. R. L. Raiford, Franklin, secretary.

Dr. C. P. Ryland,

Binghamton, N. Y., is in New York City, where he is taking a four weeks' seminar in internal medicine at the New York Postgraduate Medical School. Dr. Ryland is an alumnus of the Medical College of Virginia and was located at Buena Vista, Va., before going to Binghamton.

Dr. and Mrs. Paul L. Dent,

Recently of Point Pleasant, W. Va., left the latter part of May for Keams Canyon, Ariz., where Dr. Dent will be with the Hopi Indian Agency.

Dr. C. Howard Cain,

For some time of Orange, Va., is now in Conway, S. C. Dr. Cain is a member of the class of '30, Medical College of Virginia.

Dr. D. F. Love,

For the past three and a half years engaged in industrial practice at Raysal, W. Va., left that place with his family on the first of June for a month's vacation before going to the Children's Hospital, Pittsburgh, Pa., where he has been accepted for a residency in pediatrics. Dr. Love is an alumnus of the Medical College of Virginia, class of '28, and, before going to West Virginia, was located at New Market, Va.

Dr. F. B. Teague,

For a time health officer of Martinsville, Va., has just resumed the private practice of medicine in that city.

Dr. A. T. Brickhouse,

Formerly of Hopewell, Va., has returned to that place and resumed his work as assistant to Dr. D. Lane Elder, after about a year's service at the CCC Camp at Fort Story.

Heads State Pharmacy Board.

J. Conrad Kearfott, of Martinsville, Va., has been elected president of the Virginia State Pharmacy Board for the coming year. A. L. I. Winne was re-elected secretary-treasurer.

Dr. D. O. Hamblin,

An alumnus of the University of Virginia School of Medicine, class of '29, recently of Pennington Gap, Va., is now located at Bound Brook, N. J.

Dr. Byrd C. Willis,

Rocky Mount, N. C., was elected president of the North Carolina Hospital Association, at the joint meeting of the Hospital Associations of Virginia, North and South Carolina, held recently in Greensboro, N. C.

The Graduate Nurses' Association of Virginia,

At its annual session in Charlottesville in May, elected the following officers for the ensuing year: Vice-presidents, Miss Elizabeth Buxton, Roanoke, and Miss Mary Mastin, Richmond; secretary, Miss Mary E. Marshall, Hampton; and treasurer, Mrs. Jessie W. Faris, Richmond. Miss Frances Helen Zeigler, Richmond, continues as president, having been elected in 1934 for a two-year term.

Warning!

Doctors are warned against a stranger who gains admission to their offices and secures information about them. He obtains prescription forms, blank checks, etc., and uses them as a means of identification in buying supplies and having checks cashed in the doctor's name. Recent cases have been reported in Virginia and North Carolina.

The description given in two cases is that of a man about 45 years of age, 5 feet, 8 inches tall, about 160 pounds in weight, ruddy complexion, and dark hair which is slightly gray at the tem-

ples. He is very familiar with surgical instruments and supplies.

The American Public Health Association

Announces the appointment of Reginald M. Atwater, M. D., Dr. P. H., as Executive Secretary of the Association. For the past eight years he has been Commissioner of Health in Cattaraugus County, New York. Dr. Atwater was formerly Associate Professor of Hygiene in the Hunan-Yale College of Medicine in Changsha, China, from which post he returned to the United States in 1925 to teach in the Harvard School of Public Health. Dr. Atwater is the author of several studies in epidemiology.

Graduate Fortnight for 1935.

The New York Academy of Medicine will hold its eight annual Graduate Fortnight October 21st to November 2nd. This will be devoted to a consideration of Diseases of the Respiratory Tract. Eighteen important hospitals of the city will present coordinated afternoon clinics and clinical demonstrations. At the evening meetings prominent clinicians from various parts of the country, recognized authorities in their special lines, will discuss various aspects of the general subject. There will also be a comprehensive exhibit of books and of anatomical, bacteriological and pathological specimens and research material.

The profession generally is invited to attend. Those interested may obtain a complete program and registration blank from Dr. Frederick P. Reynolds, The New York Academy of Medicine, 2 East 103rd Street, New York City.

The Leslie Dana Gold Medal,

Awarded annually for outstanding achievements in the prevention of blindness and the conservation of vision was presented this year to Dr. William H. Wilder, of Chicago. Dr. Wilder was selected for this honor by the National Society for the Prevention of Blindness in cooperation with the St. Louis Society for the Blind. The presentation ceremonies took place in St. Louis on May 18th. The medal bears the inscription: "Wise Clinician, Devoted Teacher and Humanitarian."

Dr. Wilder is secretary-treasurer of the American Board of Ophthalmology; professor emeritus of ophthalmology at Rush Medical College, University of Chicago; and a past president of the American Academy of Ophthalmology and Otolaryngology.

For Sale—

Model 707 McKessen gas machine. Unused and a bargain. Address No. 486, care the VIRGINIA MEDICAL MONTHLY, 1200 East Clay Street, Richmond, Va. (*Adv.*)

Obituary Record

Dr. Luther Addison Robertson,

Prominent eye, ear, nose and throat specialist of Danville, Va., died May 16th at a Richmond hospital, from embolism several days after an operation for hernia. Dr. Robertson was a native of Pittsylvania County, Virginia, and was 61 years of age. He studied for his profession at the former University College of Medicine, Richmond, from which he graduated in 1900, and was assistant to Dr. J. A. White of this city for a time before locating in Danville. Besides being affiliated with many other organizations, he had been a member of the Medical Society of Virginia since 1901.

Dr. Robertson was unmarried but is survived by his sister and three brothers, one of these being Dr. W. W. Robertson, of Danville.

Dr. Blanton L. Hillsman,

Surgeon of the Police Department of Richmond, Va., died in his office on May 17th as the result of a heart attack. Dr. Hillsman was 63 years old and a native of Amelia County, Virginia. He was graduated from the former University College of Medicine, Richmond, in 1898 and had been practicing in this city since that time.

Dr. Hillsman, who served overseas in the World War, held the rank of colonel at the time of his discharge. He was a member of the Richmond Academy of Medicine as well as several fraternal and civic organizations. He is survived by his wife, two sons, and a daughter.

Dr. Jesse L. McElroy,

From 1929 to 1933, superintendent of the hospital division of the Medical College of Virginia, died as the result of a heart attack on May 5th. Dr. McElroy, who was 50 years of age, was a native of Roelsville, Ind., and attended the Indiana Medical College from which he was graduated in 1907. He was widely known as a hospital executive, at the time of his death, being director of the American Hospital, Neuilly-Sur-Seine, France. He is survived by his wife and a son.

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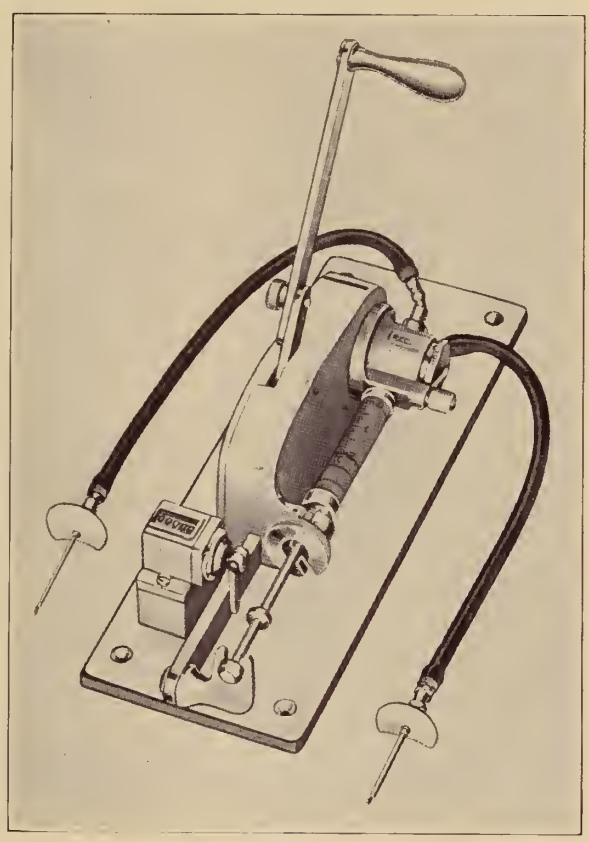

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Entered as Second Class Matter at the Postoffice, Richmond, Va.

Loose Stools in Infants

require extra diapering, and inconvenience the mother

Clinically, loose stools are accompanied by a dehydration which, when excessive or long continued, interferes with the baby's normal gain. A long-continued depletion of water is serious, since "the fluid requirements of an infant are tremendous. A normal infant 15 pounds in weight will frequently excrete as much as one litre of urine per day. A negative water balance for more than a very short period is incompatible with life." (Brown and Tisdall)

Moreover, when the condition is superimposed by chance infection, the delicate balance may be seriously upset, since the infant's reserves have already been drawn upon, so that resistance to infection and dangerous forms of diarrhea may be too low for safety. Every physician dreads diarrhea, which Holt and McIntosh call "the commonest ailment of infants in the summer months."

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ADVANCES IN OBSTETRICS AND GYNECOLOGY

The following question was recently submitted by the Editor to a number of American obstetricians and gynecologists: "What do you consider the three most significant advances in the field of obstetrics and gynecology during the past ten years?" The MONTHLY believes their answers will prove as interesting to its readers as did the answers to similar questions relating to other specialties published here from time to time.

1. A better understanding of the physiology and pathology of the genito-urinary organs.
2. Adequate demonstration of the superiority and extensive adoption of conservative principles.
3. Clarification of the treatment of malignant diseases.

H. J. Stander, New York, N. Y.

1. The increased knowledge regarding the menstrual cycle and the recovery of the human ovum.
2. Increased knowledge regarding the various hormones with the incidental development of the Aschheim-Zondek test for pregnancy.
3. Increased knowledge regarding diseases of the cervix and vagina including an appreciation of the Trichomonas Vaginalis, and the possibility of an earlier diagnosis of cervical cancer by means of the colposcope.

Carl Henry Davis, Milwaukee, Wis.

1. The increasing recognition of the fundamental importance of prenatal care, and the campaigns for the more widespread application of prenatal care in obstetrical work.
2. The development of the low cervical Cesarean section, which in my opinion is in many ways superior to the classical, especially as regards increased safety from the point of view of infection.
3. Discovery of the various pituitary and female sex hormones, with a consequent revolutionary change in our ideas regarding female sex physiology.

E. L. King, *Tulane School of Medicine*, New Orleans, La.

1. The endocrinal gland discoveries, especially the Zondek-Aschheim Test.
2. The acceptance of the superiority of the low or cervical Cesarean section above the classical.
3. The progress in prenatal care.

J. B. DeLee, Chicago, Ill.

1. The research work which led to the establishment, on a sound basis, of the hormones of the anterior pituitary body and of the ovary.
2. The modern treatment of cancer of the cervix by means of radium and X-Ray.
3. The more general adoption of the low or cervical Cesarean section in treating obstetrical complications demanding abdominal delivery.

Louis E. Phaneuf, *Tufts College Medical School*, Boston, Mass.

1. Biochemical test of pregnancy. (Aschheim-Zondek.)
2. Emphasis on prenatal care.
3. Improved facilities for clinical instruction of medical students and nurses.

Palmer Findley, Omaha, Neb.

1. The widespread adoption and more zealous practice during the past few years of antenatal or, as I like to term it, Preventive Obstetrics.
2. The improved methods of instruction.
3. The application of radium to neoplastic disease, both benign and malignant.

P. Brooke Bland, Philadelphia, Pa.

1. Advances in endocrinology.
2. Hormonal tests for early pregnancy (Aschheim-Zondek, Friedman, etc.)
3. The colposcope. (In my opinion the chief advance which has resulted from this instrument is that it has made us devote more time to careful inspection of the cervix and to prophylaxis of cancer.)

J. P. Greenhill, Chicago, Ill.

1. The organization and function of the American Board of Obstetrics and Gynecology.
2. The classification of the female pelves, by Caldwell and Molloy.
3. The advances in endocrinology and organo-therapy, based on the work of various observers.

Walter T. Dannreuther, New York, N. Y.

THE URINARY OBSTRUCTIONS IN CHILDREN.*

LITTLETON DAVIS, M. D.,
Roanoke, Va.

As the family doctor or the children's doctor is first consulted for the minor symptoms of children, I thought that perhaps you would be more particularly interested in the early symptoms and diagnosis of the urinary obstructions in children from this standpoint. I shall leave the more refined urological methods to my friend, Dr. W. W. S. Butler, Jr., who has been associated with, and helped me with many of these little patients. I would urge the closest attention to early urinary symptoms in small children, for, though they may seem minor and insignificant at first, if left alone may do irreparable harm long before the child seems ill enough to call a physician.

We shall take the term urinary obstruction to mean whatever interferes with the normal flow of urine from the kidneys to the outer end of urethra.

The relative frequency of lesions producing obstruction in children are the congenital defects, vesico-urethral valve deformities, urethral and ureteral strictures, urolithiasis, spastic and paralytic retention, tumors, foreign bodies, adhesions of meatus following circumcision and phimosis. Rarely it may be from an infection with swelling.

The obstructive symptoms may be acute, subacute or chronic, and either temporary or permanent, depending on the cause and the skill and facility with which it may be removed. Prognosis depends on the same factors plus the age of the child.

Until the more recent development of urological instruments for children, making diagnosis easier, these conditions were rarely found in life, and still are comparatively rare in incidence. To show this, I quote from records from the Harriet Lane Home, Children's Clinic, Baltimore, in 1926 (Young's Urology), as follows:

Pyonephrosis two, Hydronephrosis thirteen, Ureteral Calculus one, Vesical Calculus one, Urethral Stricture eleven, Ureteral Stricture four.

Young diagnosed and successfully operated on congenital valve obstruction for the first time in 1913. Young, Frontz and Baldwin reported twenty-six cases in 1919. Frontz collected fifty-six cases in 1927, and Colston has added several since then.

Urolithiasis, although rare in this country, is very common in China and India. Of 5,900 cases, 45 per cent were in children; 95 per cent are under two years old, and nearly all were found at autopsy and not diagnosed during life.

I shall only mention briefly that while I see many tight foreskins in babies, I see many more troublesome mild obstructions from meatus adhesions after circumcision, produced by napkin rub with scab formation at corner of meatus lip. The foreskin evidently affords some necessary protection at this age.

The early symptoms of urinary obstruction vary with the site obstructed, the amount, completeness or incompleteness of same, and its duration before relief.

Symptoms: Renal tenderness transmitted along ureters, tender distended bladder, easily palpable kidneys, increasing pain a few hours after urine is passed, dribbling, overflow of urine, hard thick bladder when small and empty, with blood or pus in urine in cases of stone, retention, dysuria, straining, without loose stools or constipation. In congenital valve obstructions the early symptoms are often confounded with colic. The babies do not gain although well fed; the pain is only moderate and eases after passing of urine. Later, there is more pain. hard thick bladder tumor, dribbling, enlargement of kidneys, pain with tenderness over kidneys and bladder area. Straining, mucous stools, and in the late stages convulsions and uremia are added.

Diagnosis: I believe a careful painstaking general physician can make a reasonably accurate diagnosis as to the cause and site of obstruction in the majority of cases by the clinical symptoms, urine examination and X-ray, the latter especially for calculi. Obstructions from calculi are usually sudden in onset in contrast to the congenital valve obstructions which are slower in development. Infection is more common in urolithiasis than in the valve de-

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formities in the early stages. Bladder distention is present only when the obstruction is below the bladder; this is absent in ureteral closure. Any urinary obstruction may simulate appendicitis or intussusception in a child. If the tumor is sub-umbilical, regardless of whether it is in mid-line or not, a catheter should be passed before an operation is attempted. The milder neuro-muscular retention is readily relieved by catheterization and mild alkalization of the urine. Blood is only present in the urine in about 8 per cent of calculi in children. The history is important in foreign bodies.

As the following five case reports so well illustrate the different types of obstruction, I report them in some detail.

Case 1.—T. M., boy, seven years old, seen in consultation for suspected appendicitis. Child showed fever and abdominal pain of two days duration. Right side and sub-umbilical rigidity, tenderness and swelling. No history of previous urinary symptoms. Boy was taken to hospital for further study, and catheterization was advised after a count of 8,000 leucocytes was found. The urine showed 2 plus pus, a trace of albumin, and the next day child went home. All symptoms subsided after emptying the bladder. As there has been no return of symptoms, this was evidently a spastic retention.

The above case well illustrates spasm of bladder constrictor muscles, the pain, temperature and rigidity being due to the temporary damming up of urine.

Case 2.—C. D. P., girl, two years old, had whooping cough for five weeks, high fever and abdominal pain for four days. More pain on moving right leg. Tender from subcostal margin on right side of abdomen to pubis, muscular rigidity at McBurney's point and sub-umbilical area. Urine, 4 plus pus, microscopic blood. White blood count 12,000. X-ray shows small round smooth stone 3 mm. in diameter in right ureter one and one-half inches above bladder. On the usual treatment for a pyelonephrosis the symptoms subsided in a few days, and the urine cleared in three weeks. The family left town after a few months without further X-rays. The child, I learned, had an operation for appendicitis at about eight years old. She is now about sixteen.

We report the following two suspected cases of congenital valve obstruction and one proven case in more detail.

Case 3.—Baby O. A. No previous history of urinary symptoms. Had abdominal pain for two days with six or seven mucous stools daily with straining. Tender but not rigid over lower abdomen. A tumor the size of an orange and slightly to left of center is pear-shaped and easily felt in the rectum. The child was placed in the hospital and a catheter placed in bladder for drainage. No fever and no pus at first. The catheter was removed from time to time but obstruction always returned. After about a week, infection with temperature developed, which subsided in about three weeks. The child left the hospital without fever but with still some dysuria and died about a year later, from what cause I do not know as I lost touch with the family.

Case 4.—S. H. H., four-year old boy, normal weight for age and height. Had been complaining for several weeks of slight difficulty in voiding. Bladder full and enlarged and apparently thickened when empty. No enlargement of kidneys palpable. Bladder empties only with much effort, and does not empty with hand compression. There is no dribbling or overflow noted. The urine is normal. This child was seen by both of us several times over a period of some weeks, had several bougie dilatations, appeared to be doing well, and, as parents moved away, we lost track of him. He is now nineteen years old.

Case 5.—Baby, aged four months old, seen first for respiratory infection in upper air passages. Gave history of crying spells which the mother thought was colic. Had fever for two days from this infection. Boy weighing ten and one-half pounds, is one pound under weight. Breast fed, plentiful supply, poor appetite and does not take all of food. I thought at that time that the spleen was very large, and, as there was much nasal mucus, had baby come to office for Wassermann. This was negative as was also the history. At that time I found the bladder full, distended and hard. It was emptied by compression and still remained the size of a lemon and hard. The left kidney which I had taken for the spleen at first is about 2 cm. above iliac spine. Right kidney not palpable. At this time Dr. Butler saw the baby and we decided to use mild stretching with small bougies as we prob-

ably had a congenital valve obstruction. The baby did well for about three months, making an almost normal gain until about mid-July, when he developed fever 103, pus 3 plus in the urine, vomiting, refused all food and was put in hospital because of a rapid dehydration and weight loss. At this time the left kidney was enlarged to the iliac spine, and the right kidney became enlarged and easily palpable. Bladder distention ceased and urine almost stopped until baby received peritoneal and subcutaneous fluids, when distention again became troublesome. Bladder could, however, be relieved by compression without catheter. Convulsions from uremia, followed by stupor and coma, resulted in death about eleven days from the beginning of the fever and vomiting.

Two very important questions come to mind in this case: should one give, or rather force fluids in the usual way when such fluids cannot be removed by the urinary tract? The other question as to whether or not we ought to operate on a baby this young in this condition in mid-July is a very mooted one.

I wish to thank Dr. Butler for his assistance in this case and for the preparation of the specimen, and also Dr. Chas. Irvin for the painstaking care with which he dissected out the bladder, ureters and kidneys intact.

In conclusion, we are glad to be able to add this last as a proven case of congenital valve obstruction to the small number already reported and the four other cases of urinary obstructions in children to illustrate the symptoms and diagnosis of these more rare of the urological diseases in children.

Medical Arts Building.

URETHRAL OBSTRUCTIONS IN CHILDREN.*

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The cases which Dr. Davis and I are reporting represent a type which is far more common than one would think on first hearing of it. The first reported autopsy of congenital valve dates as far back as 1802 and at intervals up to 1913 when Young first made the diagnosis in a living subject by examination with a urethral instrument. Hinman and Kutzman, in 1925, report fifty cases with thirty-one under ten years. Prior to 1919, twenty-four had been found at autopsy and only three in a living subject, and since that time they report eight at autopsy and eighteen in the living subject. Of the eighteen, sixteen were operated upon with no surgical death. Young reports, in 1925, twelve cases with eight operated on and well, and the other four not operated on and dead. In 1929 Young and McKay report nine cases seen since 1919, with six cures and one incontinent. These reports contrast strongly with the first twenty-two reported by Young, Frontz and Baldwin, with twenty-two deaths.

Of the cases with congenital valve to date, two-thirds are reported under ten years of age. A. Randall reports a case in a baby ten days old which he thinks might have been saved if cystostomy had not been refused. At autopsy, such advanced renal destruction was present that the condition must have existed in utero. Young and McKay feel that this condition accounts for many still-births and in others who live only a few days. When an emaciated child is born with a distended abdomen and palpably enlarged abdomen and kidneys, the diagnosis is certain. Dr. Geo. Hurt mentioned to me having recently delivered at the Jefferson Hospital a dead foetus with a tremendous abdomen which became flat on catheterization. Undoubtedly this is due to congenital valve. The onset of symptoms may not be noted before infection occurs, so that one-third are above ten before the condition is recognized, and several are reported fifty-seven and above.

The clinical side—that is, the symptoms—has been discussed by Dr. Davis. Suffice it to say obstruction in a child follows the same course as in

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the aged. They fall in two groups—the toxic symptoms of renal failure, anorexia, nausea, anemia and on to uremic coma, and the local symptoms of infection and obstruction and difficulty in voiding and frequency or enuresis.

This case could not be delivered and it was noted that no amniotic fluid was present. When it was seen that the child was dead, its abdomen was punctured and 1000 c.c. of fluid, which proved to be urine, was withdrawn. After delivery, the bladder was refilled and this photograph taken.

Obstruction other than valvular produces the same symptoms. Two years ago an under-nourished boy, ten years old, was brought to the Roanoke Hospital Dispensary unable to void. A large mass was felt extending to the umbilicus. On catheterization by Dr. W. H. Saunders, resident at that time, fourteen ounces of urine were withdrawn. After leaving in a retention catheter for several days, a stone the size of a pea was removed from the posterior urethra with complete relief of the retention. This boy had had pus and frequency since four years of age. H. S. Brown, of Tulsa, Okla., reports a case ten years of age with enuresis since birth due to congenital stricture in the anterior urethra, and another eighteen years of age, with frequency for years, showing trabeculated bladder and a diverticulum and valves extending from the internal meatus to veru. Both were cured by dilatation.

Other causes of enuresis are cord lesions and, in children particularly, spina bifida. Mertz and Smith report nine personal cases one and a half to eight years of age, with seven in females and two in males, and thirty-four in the literature, incontinence with bladder retention occurring in fifteen. Twenty-four were operated on with twelve cures, and six improved. They feel that the dysfunction is due to pressure. We have attending the clinic at present a case of spina bifida in a child of eight months which has been shown by Dr. Spessard. There is no abdominal tumor and no urinary abnormality at present.

Livermore reports a hydronephrosis due to the obstruction of a hypertrophied verumontanum.

The specimen removed by Dr. C. M. Irvin, we have here from the case reported by Dr. Davis, shows first the tremendously thickened bladder wall. It is this muscular constriction which prevents the ureter from emptying itself and dilates the ureter and kidney pelvis. This view (Tandler and Zuckerkandl) contrasts with that of Young who regards the ureter as being overpowered by repeated high pressure in the bladder. If due to pressure only, bilateral regurgitation into the ureters would be more common than a unilateral. Bumpus, in 527 cystograms of cases having a residual urine, found a reflux in only twenty-five. The dissection does not extend far enough forward to show the valve but shows beautifully the dilated ureter and pelves.

If I had not been deluded into a false security by the temporary periods of improvement in this child, and had insisted on a suprapubic drainage, I believe there would have been a good chance of its survival.

A short time is left to discuss the diagnosis of the condition. In addition to local and constitutional symptoms, we have a palpable kidney and bladder. The diagnosis can be confirmed by determination of the blood urea which gives an excellent estimate of the renal function. The relative function of the two kidneys and localization of the obstruction can be shown by intravenous neoskiodan and by retrograde cystograms. Age is no contraindication to intravenous neoskiodan. Campbell reports its use in children with phthalein 5 per cent in two hours.

The details of treatment are purely mechanical and not to be taken up now. The prognosis in any case will depend on the duration of the condition and the consequent renal damage from pressure and infection just as occur in prostatic hypertrophy.

To summarize: The early incidence in life, the insidious nature of urethral obstruction gradually causing irremediable damage and the ease of cure if recognized early, emphasize the extreme clinical importance of the condition and the necessity for

coopera'ion between the attending physician and the urologist.

The diagnosis of pyelitis, like that of hysteria, should be made with reservations. If pus persists more than a month, a urological examination should be made. While infections of throat or constitutional conditions may introduce bacteria into the blood stream which are eliminated by the kidney, the persistence of pus or bacteria means stasis in the urinary tract. This can usually be demonstrated by intravenous or retrograde cystograms with little discomfort to the patient. A fresh urine specimen obtained after cleansing the penis or catheterizing the female should be carefully stained or cultured to determine the type of infection, while any indication of a chronic or acute toxic condition can be determined accurately by a determination of the blood urea. This information can be gotten from any child with little or no danger, and then the necessity of cystoscopy determined.

SUMMARY

1. Urethral obstruction in childhood is not a pathological curiosity but a fairly common condition, and Dr. Davis and I report eight cases almost from memory.

2. Two-thirds of them are cured if recognized before an acute infection or uremia occur.

3. The diagnosis can usually be made on the history and physical findings with aid of the X-ray, so that the trauma of a cystoscopy is rarely necessary. Congenital valves, stricture, spinal cord injury or defect, and stone are reported.

4. The obstruction may be partial or intermittent, producing a gradual onset of symptoms which may occur at any time from before birth to fifty-seven years.

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SOME EXTRA UTERINE COMPLICATIONS OF PREGNANCY.*

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Pregnancy predisposes to certain diseases, and aggravates others. It is wise to remember that the pregnant woman, while more susceptible to certain complications, may also suffer from any disease which occurs in the non-pregnant woman.

Frequently focal infections in the teeth and tonsils are overlooked early in pregnancy, only to be treated after some other complication has occurred. We advise all women to consult their dentists early in pregnancy, and recommend the removal of in-

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fected teeth that cannot be saved. Cavities should be filled to prevent rapid decay, which is common during gestation. The addition of small doses of cod liver oil and calcium phosphate to the patient's diet safeguards the teeth and protects the gums.

If the tonsils are infected and should be removed, operation can be performed with more safety around the fourth month than in the early or late months of pregnancy. Local anesthesia is probably best, but ether may be used.

Thyroid dysfunction during pregnancy has been investigated in recent years. The relationship of the thyroid to the sex glands has been observed since the early records of medicine, but its nature is still an unsolved problem. Enlargement of the thyroid during pregnancy has been observed frequently, and it is probably due to the increased metabolic demand associated with pregnancy and lactation.

Pregnancy may incite a true hyperthyroidism, but spontaneous remission is more common in the patients who first exhibit thyroid symptoms during pregnancy.

Basal metabolism studies are of great importance both in determining hyperthyroidism and the proper dose of thyroid for patients with hypothyroidism.[1]

Administration of the proper amount of thyroid to patients with hypo-function will increase fertility, decrease the frequency of abortions and the danger of hemorrhage in some patients, and increase the chances for a normal healthy baby.

Many patients with mild hyperthyroidism may be easily carried through pregnancy and lactation on small doses, five drops twice daily, of compound solution of iodine.

The treatment of thyroid disease during pregnancy is the same as in the non-pregnant patient. If severe manifestations develop due either to pressure, or hyperthyroidism, pregnancy is no contra-indication to operative interference by a well-trained surgeon.

Recently I attended a patient with hypothyroidism, and successfully carried her through pregnancy and labor. She was never able to approach normal either in the way she felt or by basal metabolism studies, on less than ten grains of thyroid daily.

Another patient with a toxic adenoma was operated upon at the third month of pregnancy and has improved constantly. She is now four months pregnant.

Appendicitis: This complication is at times a difficult one to diagnose, and delay greatly increases the dangers associated with it.

To quote Maes[2]: "Appendicitis in pregnancy in its milder manifestations is little more serious than it is in the non-pregnant woman, though its potentialities for harm are far greater, and the wisdom of delayed operation is therefore more questionable. Appendicitis in its acute manifestations, however, is exceedingly serious, and there is even less justification for temporizing with it than there is in the non-pregnant state."

C. Jeff Miller,[3] in a series of 239 fatal cases of appendicitis, found that less than half exhibited the common symptoms of pain, nausea and vomiting, and localized tenderness.

Nausea and vomiting during early pregnancy are not unusual. Pain in the lower abdomen is common in all stages of pregnancy. These may confuse the picture.

Consideration of the changes in anatomical relationship of the appendix during pregnancy are important. Baer[4] and his co-workers at the Michael Reese Prenatal Clinic made repeated roentgen observations on seventy-eight normal patients to determine the anatomic relations of the appendix at the different months of pregnancy. They found that the base of the appendix is gradually displaced upward after the third month of pregnancy, reaching the level of the iliac crests by the end of the sixth month.

After the tenth day post-partum the base of the normal appendix is usually at the same level as in the normal non-pregnant woman.

Parity apparently plays no part in the diagnosis of this complication. The stage of gestation is important because appendicitis is both more frequent and more dangerous as pregnancy progresses. Various workers have estimated that advanced appendicitis and rupture are from three and one-half to five and one-half times as frequent in pregnant as in non-pregnant women, due undoubtedly to delay in diagnosis.

Maes[2] states "the history of previous attacks is perhaps the most valuable single point in the making of a diagnosis."

Pain, nausea and vomiting, often tenderness over the appendix, and frequently fever, are all important.

After quickening, foetal movements frequently cause discomfort. An increase in the pain asso-

ciated with these movements has been observed by some patients with appendicitis.

Laboratory tests unfortunately give little aid in the diagnosis of appendicitis during pregnancy. During normal labor the white cell count usually increases, with an average of 18,000, but varying from 9,000 to 34,000 according to DeLee.[5] He also states the differential count shows an increase in the polynuclear neutrophiles. The maximum increase is observed toward the end of labor and rapidly decreases during the first twenty-four hours after delivery, but usually requires several days to return to normal.

Appendicitis may easily be mistaken for ruptured ectopic pregnancy or ovarian cyst with twisted pedicle. Operation is necessary in all three conditions and a mistake as to which condition the patient has should not change the treatment.

Pyelitis is the most important disease to be differentiated. It is most common on the right side. Polak[6] has pointed out that in appendicitis the sequence is pain, later fever and rarely chills, whereas in pyelitis it is chills, fever and pain. In pyelitis pain and tenderness over the involved kidney are frequent, and pus in the urine may frequently clarify the picture. However, it is wise to remember that an acutely inflamed appendix in close proximity to a ureter may often cause pus cells in the urine. In doubtful cases a cystoscopic examination will usually settle the diagnosis.

Operation for a mistaken appendicitis is better than the avoidance of operation because of a mistaken pyelitis.

While some surgeons prefer a McBurney incision, and others a right rectus, all agree that an unruptured appendix should be removed immediately.

Wilson[7] advises the Porro operation for a case late in pregnancy with ruptured appendix. However, the majority of writers advocate conservatism, that is, drainage of the abscess, large doses of morphine and plenty of fluid by clysis and intravenous methods, with delivery from below if the patient goes into labor.

I have observed ten cases of appendicitis in pregnant women. One had a ruptured appendix during the third month of pregnancy. She later aborted but recovered. Another patient was operated upon at term. An acutely inflamed but unruptured appendix was removed, and the abdomen closed without drainage. This patient went into labor three days later, and I delivered her with mid-forceps shortly after the cervix was fully dilated. She had an uneventful recovery until three weeks after delivery, when she had a sudden vaginal hemorrhage of probably 300 c.c. of blood. Examination revealed the cervix still 1 cm. dilated. She was curetted and a small piece of placental tissue 1 cm. by 2 cm. removed. She had no further trouble.

It is possibly true that uterine contractions may tear loose adhesions which have walled off a ruptured appendix, but not all patients go into labor and a Porro operation is a major operation even in clean cases. I believe it unwise to interrupt a pregnancy or remove a uterus simply because a patient has a ruptured appendix.

Pyelitis: Probably the first published description of pyelitis as a complication of pregnancy was by Smellie in 1752. An enormous literature has accumulated on this subject.

It is probable that pregnancy predisposes to pyelitis. During the latter half of pregnancy, the foetal head may compress the ureters at the pelvic brim, but the work of Hofbauer[8] has shown the constriction of the ureter is below the pelvic brim, and usually close to the bladder. We have seen two cases at autopsy where the constriction just outside the bladder was so great it was difficult to pass a small probe through the ureters.

This obstruction has been explained by Hofbauer as a result of hypertrophy of the musculature of the bladder and proximal portion of the ureters, coincident with the hypertrophy of the uterine muscle.

Cornell and Warfield[9] have found dilatation of the ureters frequent in pregnancy. As early as the third month a definite increase in dilatation may be observed, usually more pronounced in the right ureter than the left. These workers were unable to visualize satisfactorily the pelvic portion of the ureters.

The mode of entrance of bacteria to the kidneys is a subject of controversy. Two avenues of entry are (1) ascending infection along the ureteral lumen, and (2) infection by way of the blood stream.

While bacteria may pass through the kidneys without causing a definite infection, it is probable that most pyelitis is of haematogenous origin and occurs more frequently in the presence of ureteral dilatation or stricture with poor drainage.[10]

Some cases of pyelitis are undoubtedly due to a flare-up of an old infection which may have occurred even in infancy.

Focal infections, especially in the teeth and tonsils, often cause pyelitis.

Vesical irritability, elevation of temperature, sometimes high, often irregular, and associated with chills, may give the first evidence of infection. Pain in the kidney region and marked tenderness in the costo-vertebral angle over the kidney involved are perhaps the most diagnostic findings. Tenderness frequently extends downward along the course of the ureter. Pus in the urine and leucocytosis are usually observed. Renal tenderness is, I believe, a most useful sign.

Pyelitis may easily be confused with appendicitis, and in the early months of gestation ectopic pregnancy must be considered. In districts where malaria is common, pyelitis is sometimes unrecognized until the patient fails to respond to quinine therapy.

Treatment: When possible, prevention is best, and the correction of foci of infections in the mouth, throat, and other parts of the body, will reduce the incidence of pyelitis.

A patient seen at the onset of an acute pyelitis should usually be treated by the use of liberal amounts of water. If nausea appears, fluids must be given by venoclysis, hypodermoclysis or proctoclysis.

Rest in bed is essential. Free elimination by bowel is important, and any tendency toward constipation must be corrected, to decrease the migration of colon bacilli from the bowel to the blood stream.

Postural treatment may be of value in some cases. The patient's position may be changed by elevating or lowering the foot of the bed. Frequent use of the knee-chest position has been advocated by other workers. Lying upon the side opposite the infected kidney seems beneficial to some cases.

This paper cannot include any full discussion of the use of drugs. We have, I believe, used all of the commonly prescribed urinary antiseptics. I believe in changing the reaction of the urine every few days. During the acid period we use hexamethylenamine one gram (fifteen grs.) three or four times daily.

To alkalinize the urine, sodium bicarbonate gr. thirty every four hours is usually effective.

Recently I have seen pituitary extract used, as advocated by Hofbauer, and I have been told the results are good. We have no experience with this treatment.

Any patient on our service who does not respond to the medical or postural treatment within twenty-four to forty-eight hours is seen by the urological service. A cystoscopic examination is usually made and catheters passed to the kidney pelves. The result of this treatment is frequently phenomenal, and I sincerely endorse it. Contrary to the statement in some textbooks, we have observed no ill effects in more than one hundred cases treated by this method, with the catheters left in the ureters from twenty-four hours to five days. Of course, the catheters must be kept open and should be removed if they do not drain or the patient goes into labor. We have had two abortions in the last fifty cases, probably the result of the toxemia associated with the pyelitis and not due to cystoscopic examination.

I believe that the early use of ureteral drainage will actually reduce the incidence of abortions and premature labors, because it reduces the toxemia and lowers the maternal temperature. Furthermore, this treatment decreases kidney damage.

We have successfully carried through pregnancy several patients whose former pregnancies had been terminated by therapeutic abortions because of pyelitis which failed to respond to medical treatment. One patient was first seen by me early in her third pregnancy. At that time she had an acute pyelitis with septic temperature and frequent chills. She stated both former pregnancies were interrupted before the sixth month because of pyelitis. She had never had a cystoscopic examination.

This patient was referred to a urologist, and after a cystoscopic examination and ureteral drainage she improved rapidly. Because of ureteral strictures the ureters were dilated several times during the pregnancy. She was delivered at term of a normal living child. A fourth pregnancy occurred and terminated successfully at the ninth month, with no symptoms of pyelitis during either the prenatal or postnatal period.

Therapeutic abortion because of pyelitis is seldom indicated or necessary if the ureters are drained early.

SUMMARY

The time allotted one paper necessitates a discussion of only a few of the extra uterine complications of pregnancy.

Focal infections should be corrected not only because of their influence on the complications discussed in this paper, but also because of their relationship to cardiac disease, the toxemias of pregnancy, and the patient's general physical condition.

Spontaneous remission of hyperthyroidism occurring in pregnancy is common after pregnancy and lactation.

Pregnancy is no contra-indication to operation for thyroid disease in its severe forms.

Pyelitis is both a frequent and serious complication of pregnancy. Therapeutic abortion is seldom necessary for this condition if early cystoscopic examination and ureteral drainage are instituted.

Appendicitis in pregnancy requires the same treatment as in the non-pregnant woman.

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DISCUSSION

DR. GREER BAUGHMAN, Richmond: Dr. Ware has very wisely limited the discussion of extra-uterine complications of pregnancy to those that are more frequently met with and has ably handled his subject in such a way that there is little left for me to say except to amplify what he has said.

Pyelitis is the most common of the extra-uterine complications of pregnancy and the puerperium for that matter. Fortunately it is rather easy to diagnose except where it complicates or is complicated by appendicitis or some other acute right-sided abdominal condition. I say right-sided advisedly because the pyelitis of pregnancy starts so frequently on the right side that when I find similar signs on the left side I think that I am dealing with a stone in the kidney or ureter.

The malaise, temperature, pain referable to the ureter or the kidney, the blood picture, tenderness, etc., may be absent, but the findings of clumped pus cells in an acid urine that has been catheterized will be present if we examine sufficient number of specimens, unless the ureter is completely blocked. As a final differentiation we have the cystoscope.

In the mild cases, switching the urine from acid to alkaline and then back again to acid associated with a high iron, vitamin, and caloric diet, with an enormous amount of water by mouth, will usually clear up the symptoms. The severe cases will usually clear up so far as symptoms are concerned with catheter drainage of the ureters. Whether the urine ever becomes bacteria free or pus free is a question. Once in a great while these severe cases have to be aborted. Where we have the pyelitis associated with chills, fever, and severely ill, in almost every instance the infection has travelled from the pelvis to the parenchyma. Here the question of whether the woman should be allowed to become pregnant again comes up, and, if pregnant, whether she should be aborted in the interest of her longevity. A careful study of her kidney function, cystoscopy, pyelograms and a careful summing up of the case from every angle is the fair way to come to a conclusion.

The thyroid is probably next in frequency as a stumblingblock in pregnancy. Halstead found, in 1896, that if the thyroid of a pregnant dog were removed the puppies were all born with goitre. Dr. J. Earl Else, with a large experience, found in families where children had goitre that the mothers had a thyroid deficiency at least during pregnancy. A sign of a good pregnancy is a slightly enlarged thyroid. A normal pregnancy will show a rise in metabolism rate so that at the end a plus twenty or plus thirty is about normal. These cases are as a rule without thyroid symptoms.

A low blood pressure associated with rapid gain in weight should always make us apprehensive of thyroid deficiency and should make us check with the metabolic rate to see if thyroid is not indicated.

The dose of thyroid during pregnancy should be lower than we ordinarily give and the cases should be watched very carefully for hyperthyroid symptoms because the tendency in pregnancy is upward so far as the thyroid is concerned.

DR. RICHARD MASON, The Plains: I did not quite understand Dr. Baughman's statement in regard to right-sided pyelitis. Did I understand you, Doctor, to say that if you have these symptoms on the right side you take it for granted that you have a right-sided pyelitis?

With the same symptoms on the left, you take it to be ureteral calculus?

DR. BAUGHMAN: Yes, sir. The pyelitis almost always starts on the right side.

DR. MASON: Is that particularly true of pregnant women, or of all cases?

DR. BAUGHMAN: I do not see the non-pregnant woman much. I am inclined to think that pyelitis is more common in everybody on the right side. I hope somebody will check me on that.

DR. JOSEPH BEAR, Richmond: Dr. Ware has certainly covered the subject in a very broad sense, and there is very little more to be said. There are, however, one or two points that I should like to re-emphasize. The first is the question of surgical intervention during pregnancy. Formerly, it was believed that any surgical intervention during pregnancy would almost invariably bring about either abortion or premature labor. At the present time, however, thanks to the department of anesthesia and the perfected surgical technic, this particular idea has become more or less obsolete, because we now know that almost any complication may arise during pregnancy and surgical intervention does not, as a rule, bring about an interruption of pregnancy.

It was thought in the earlier days that even the extraction of a tooth would interrupt pregnancy. A point which should be strongly emphasized is, that every pregnant woman who presents herself to the obstetrician should be instructed to consult her dentist early and have whatever dental work done without hesitation and fear. Of course, we would not like our patients to occupy the dental chair for several hours, because this would interfere with the nervous balance.

Pyelitis may become a most serious complication of pregnancy. There are, of course, a severe grade and a milder grade. I believe, in the less severe grades of pyelitis it can be combated by the early administration of urinary antiseptics, without the necessity of cystoscopic treatment. In the more severe grades, however, I recommend ureteral catheterization, because it permits a free drainage, and yet does not interfere with the pregnancy. I should like to ask Dr. Ware, however, if the retained catheter in the ureter would not cause subsequent irritation of the ureteral mucosa. Some believe that it does, and that the effect might be rather severe.

In pyelitis one can never tell when the acute symptoms will arise or when the lesser type may become the more severe type. Recently I had a case of the lesser grade of pyelitis in a patient about five months' pregnant. She was given the usual course of treatment and apparently was getting along quite well. Suddenly she developed acute symptoms with severe toxic ileus. Fortunately, during that time she entered into labor and had a precipitate delivery. Recovery was uneventful.

I enjoyed Dr. Ware's paper and the discussion.

DR. WARE, closing the discussion: In answer to Dr. Mason's question concerning the kidney most frequently involved in pyelitis of pregnancy, we have not calculated this in our series of cases. It is, however, a fact that pyelitis occurs more frequently in the right than in the left kidney.

Dr. Bear discussed the question of surgical procedures during pregnancy. I believe surgical operations should be postponed until after delivery and the puerperium whenever possible. Acute disease of the thyroid, gall bladder, appendix, and other structures which indicates immediate operation should have the benefit of operation regardless of the presence of a pregnancy.

Last year I examined a young woman approximately two months' pregnant. She also had a cyst of the right ovary which was about the size of a grapefruit. I advised removal of the cyst. Her home was in another state, and she returned there for operation. Later her doctor wrote me that when he removed the cyst, he decided to remove her appendix at the same time. This necessitated enlarging the abdominal incision, and the appendix, which was not acutely inflamed, was removed with difficulty. Because the surgeon feared an abortion or a hernia in the abdominal incision, he interrupted the pregnancy by abdominal hysterotomy. This type of unnecessary operation I wish to advise you against.

The danger of trauma as a result of ureteral catheters left in several hours or days I discussed in my paper. We feel that our patients have had no bad effects from this procedure and frequently the improvement after ureteral drainage has been amazing. Catheters should always be removed if the patient threatens to go into labor.

I will mention a case I recently saw in consultation, which demonstrates how difficult it is at times to make a correct diagnosis. A white woman, five months' pregnant. Her temperature was 104° F. and had been above 102° F. for seven days. She had a definite mass in the right upper quadrant of the abdomen, with marked tenderness and rigidity of the anterior abdomen over this area. Her physician stated the mass appeared about one week before she entered the hospital, and had increased in size and tenderness each day. She lived in a malaria district. We were unable to make out any enlargement of the spleen. Two blood smears for malaria showed no parasites. A surgeon was called in consultation. All agreed the patient probably had acute gall bladder disease. The abdomen was opened under local anesthesia. The gall bladder was distended but normal, the liver markedly enlarged. The abdomen was closed immediately. After two days a blood smear showed estivo-autumnal malaria. Treatment for malaria was commenced and the patient improved rapidly.

THE COMMUNITY AND MEDICAL ECONOMICS.*

R. W. GARNETT, M. D.,
Health Officer
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The people of the United States are spending for all forms of medical care about three billion dollars annually, or an average of $30.00 per person per year, according to the report on "The Cost of Medical Care."

There are approximately 150,000 practitioners holding the degree of Doctor of Medicine—one doctor to about 800 of the population. There are about 63,000 dentists—one to about 1,700 of the population. There are over 200,000 trained nurses —one to about 600 of the population. There are nearly 900,000 hospital beds—one to about 130 of the population. It would seem that for this expenditure and with this number of trained persons prepared to give medical service and with this number of hospital beds that the people of the United States should be receiving adequate medical care. That such is not the case is very apparent to any student of conditions as they exist.

Scientific knowledge is at our command which, if fully used, would prevent much of the disease which is now partly or wholly incapacitating millions of our people and causing incalculable economic losses. Recent studies have thrown a flood of light on this subject and have shown that many pre-conceived ideas are entirely wrong.

A recent study of 9,000 average families in 130 communities in eighteen states showed that only 43 per cent of the needed medical service, only 25 per cent of the hospital care and only 24 per cent of the needed dental care was being received. It has frequently been assumed that people can secure needed medical and surgical attention either as pay or charity patients. Of course, those who have wealth can pay for any service they desire, but it is certainly erroneous to assume that the poor, even with our greatly increased number of clinics and hospitals, are receiving all the medical care and supervision needed. The adage, then, "only the rich and the poor receive the best medical care" expresses only a part truth, for the poor do not receive adequate care and, as is implied in the above quoted adage, the great middle economic group is often unable to pay the costs and is not willing to ask for charity. This middle group therefore suffers perhaps most of all.

With the foregoing premises, therefore, one must reason to the conclusion that there is something wrong.

The first question, then, which might be considered is, "Are doctors, dentists and nurses rendering all the professional service of which they are capable and which they desire to render, and are our hospital and clinic facilities being utilized to the fullest extent?"

Under present day standards the cost of securing preparation for the practice of medicine both from the standpoints of general and technical training and of equipment is enormous, and is on the increase. The cost of construction, equipment and maintenance of hospitals is very high. Yet on the average only about 75 per cent of these hospital beds are in daily use, and highly trained doctors and dentists are forced to spend many hours of time awaiting in high rent, expensively equipped offices for patients, many of whom never come.

That the income of the average physician is too low is a well recognized fact, although outstanding specialists receive high incomes, for, where one doctor has an income of $10,000 per year, two have an income of less than $2,500 per year. "This something wrong" is not the fault of the individual doctor, nor, perhaps, is it the fault of the individual patient.

Reflection, then, will show, I think, that, as a matter of fact, doctors, dentists and nurses are not rendering all the professional service of which they are capable. In addition to the economic barrier, there is also the fact that carelessness and ignorance on the part of a large element of the population in a measure accounts for this failure to fully utilize the facilities which are at hand for securing needed care.

*Read before the South Piedmont Medical Society at Lynchburg, Va., November 27, 1934.

The second question for discussion, then, is: "Are the people of the United States receiving the service which they should receive?" The reply to this question is also in the negative, for we can see all around us people in need of medical, surgical and dental attention sufficient to keep all the doctors and dentists busy.

Dr. Roger Lee, of Boston, working with the Committee on the Cost of Medical Care, estimated that, in order to provide all the medical care needed for all the people in the United States, 7 per cent more doctors, 75 per cent more dentists, 10 per cent more nurses and 59 per cent more hospital beds would be needed. He estimates that, with proper organization, with elimination of unnecessary waste motion and over-head, complete medical service can be supplied to the American people for $36.00 per capita per year, whereas $30.00 per year per capita is now being spent for very inadequate care.

The third question is: "What can be done about it?" If one might presume to undertake to answer such a weighty question, I would say that four points should be clearly defined:

First.—Greater emphasis should be placed on "Preventive Medicine" by medical schools, physicians and people. Although marvelous advances have been made within the past half century and the sick and death rate from many diseases greatly reduced, we still have a long way to go, for much preventable disease is not actually being prevented. Thousands of children are still growing up physically handicapped from preventable or remediable conditions, such as adenoids, diseased tonsils, bad teeth and undernutrition. Millions of our workers are at a low standard of physical fitness. Tuberculosis is still reaping too high a toll.

Eugenic birth control is only at its beginning and defective or criminal strains are propagating their kind at an alarming rate.

The *Second* thing that may be done about it is: "Periodic Health Examinations."

Through the combined efforts of doctors, insurance companies, civic leaders and public health agencies this phase of medical practice should be developed.

The doctor should be looked upon as more than a refuge when acute illness comes. He should be thought of as Health Advisor. People, while well, should come to their own physicians for examination and advice as to how to *keep well* and should feel that they are paying for valuable service.

Physicians interesting themselves in the "The Health Examination" and showing their patients its worth-whileness can build up a phase of work which will bring a deep sense of satisfaction and also commensurate financial rewards. In my opinion, many of our general practitioners are neglecting to develop this field of work to their own and their patients' loss.

A *Third* thing that can help to bridge the gap is: "Group Practice."

From the experience of groups practicing in various centers as well as from the viewpoint of good economics, it appears that this system should be extended in order that, through cooperative effort and reduction of over-head, the people of a community may be served more effectively and at a cost more nearly within their ability to pay.

Already in some cities physicians are being encouraged to organize themselves as groups around the hospital, making common use of waiting rooms, secretarial and nursing service, technical aides and X-ray and laboratory service in the hospital itself with a proportionate saving in over-head.

Group practice should be developed to a greater extent as one means of bridging the gap between physicians needing patients and an increased income on the one hand, and patients needing scientific medical service at a cost within their economic range on the other.

The *Fourth* is: "Hospitalization by the Group Payment Plan." Plans embodying this general principal have been worked out in over forty American cities whereby the cost of hospitalization is being spread over the whole group.

"Hospitalization by the Group Payment Plan" is manifestly of definite advantage to Mr. Average Man who, for a small amount spread over a year and paid in direct or through his employer's office, meets the hospital bill for himself and his dependents before it is due—a case of being one jump ahead of misfortune.

It has proven to be a blessing to hard pressed doctors, for, under this plan, they stand a much improved chance of collecting their fees, since the hospital bill of the patient will already have been taken care of.

It has also proven to be of great benefit to participating hospitals, enabling them to solve their

financing problems satisfactorily, and, therefore, to serve the community in a more complete way.

This plan has been endorsed in principal by the American Hospital Association and by the American College of Surgeons. Dr. Chas. A. Dukes, of Oakland, Calif., Vice-President of the American College of Surgeons, in presenting the plan in operation in Alameda County with its population of 500.000, said, "It seems to me that a plan that makes it possible for an employed person to (1) get hospitalization at a small cost spread over a year, (2) in a hospital of his own choice, (3) with the attendance of a physician of his choice, (4) allowing the physician to set his own fee and collect it in his own way, should elicit the support of every man and woman who desires to see people of moderate means pay for their own hospitalization rather than become an object of charity either in a tax supported or voluntary hospital. To my mind, group hospitalization solves the problem for patients, doctors and hospitals and, instead of making an opening wedge for State or compulsory medical care, as some fear, really acts as a preventive."

In conclusion, increased emphasis on and support of (1) "Preventive Medicine," private and public; (2) development of the "Periodic Health Examination" by private physicians; (3) "Group Practice," and (4) "Hospitalization by the Group Payment Plan" cover in principal the answer to the questions (1) "What can be done to provide more complete medical care for all the American people?" and (2) "What can be done to provide a better opportunity to our highly trained American physicians to render the full service of which they are capable?"

In my opinion these are the four lines of development which, if conscientiously and persistently followed, will prove to be of untold benefit to the people and the physicians of our respective American communities, and will lead away from, and not to, the "State Medicine" so much dreaded by some members of the profession.

With millions of our people unemployed and additional millions living below the economic borderline, the need of some readjustments is apparent.

An important question for the medical profession, therefore, is: "Are we going to face the facts and be leaders in the movement, or are we going to be dragged into it by a public sentiment speaking through its governmental agencies?"

MEDICO-LEGAL ASPECTS OF APOPLEXY.*

J. MORRISON HUTCHESON, M. D.,
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There has existed for many years a widespread belief, common alike to physicians and laymen, that apoplexy is often the result of acute physical or mental strain. Textbooks have furnished and continue to furnish a considerable measure of support to this idea. With the advent and growth of casualty insurance in its several forms, the significance of fortuitous agents in disease has vastly increased; and since apoplexy is one of the commonest of diseases, such accidental factors as may enter into its causation must necessarily require frequent consideration and critical evaluation.

As defined by Dana, "Apoplexy is a clinical term used to indicate a condition characterized by sudden paralysis, usually attended by loss of consciousness, and due either to the breaking or blocking up of a blood vessel in the brain." Though the present discussion purports to deal with the etiology of apoplexy, it is assumed that a clinical distinction between cerebral hemorrhage and thrombosis is usually impossible and that post-mortem studies often fail to reveal the exact nature of the cerebral lesion. In most instances the physician reaches the limit of his knowledge when he concludes from a consideration of the symptoms and physical findings that the patient has suffered a "stroke." Such a diagnosis is not as a rule difficult, but when called upon to establish a causative relationship between the stroke and some supposed physical or mental strain preceding or attending it, the doctor's task is by no means easy.

*Read before the sixty-fifth annual session of the Medical Society of Virginia, at Alexandria, October 9-11, 1934.

The question may present itself in several forms. A male teacher of fifty-three, previously known to have hypertension, suddenly falls, while walking down steps in his home, arises after a few minutes with no apparent injury, but within a few hours develops paralysis, coma and death. He has carried a considerable amount of accident insurance, which is now claimed by his heirs on the ground that the fall caused death. A carpenter of sixty, previously in good health, falls from a low scaffold, is picked up unconscious and develops complete hemiplegia. He demands compensation on the ground of accidental injury in line of duty. What is the physician to say when consulted as to the soundness of these and similar claims or when summoned to testify in court concerning them? If he refers to his textbooks, even the most modern, he reads that, while most apoplexies occur in elderly people with hypertension, the exciting cause is a rapid rise of blood pressure occasioned by severe mental or muscular exertion. If he should canvass his own experience, he will recall that states of stress were conspicuosuly absent in connection with the cerebral accidents he has seen. He realizes, also, that the stroke is often preceded by premonitory cerebral symptoms such as dizziness, which may cause a fall. Thus he may be unable to reach an opinion or left to choose his side of the argument according to his sympathies.

Following the discovery by Wepfer in 1658 of the hemorrhagic nature of apoplexy, succeeding writers recognized vascular disease as the important cause and centered their discussions chiefly upon its nature. In the early 19th century the conception of cerebral hemorrhage as arising from the giving way of the diseased vessel wall, when subjected to increased intravascular pressure from excessive bodily stress, appeared in textbooks, along with other exciting causes, and has been retained to the present time. It apparently originated in the reports of occasional cases in which an apoplectic stroke occurred during exertion and grew in popularity with the widening interest in the study of blood pressure. Additional support appeared in the supposed discovery that the cerebral arteries are without vaso-motor control and, consequently, their pressure must passively follow changes in the general circulation. I propose to analyze this conception in the light of present-day thought, with the hope of clarifying its implications and emphasizing its limitations.

The theory of bodily stress as an exciting cause of apoplexy involves the following assumptions: (1) that rupture of a large vessel does occur, (2) that exertion does raise tension in the cerebral arteries, and (3) that rupture results from relatively slight elevation of pressure such as has been seen in the peripheral arteries following exercise.

Conflicting statements have appeared from pathologists as to the relative frequency of hemorrhage in patients dying of clinical apoplexy for the reasons stated hereafter, but in some series of cases studied thrombosis with softening has been reported by reliable observers as occurring more often than bleeding and in ratios as high as 4 to 1. The nature of the cerebral bleeding found has long been a matter of controversy. The earlier authorities regarded the bursting of a vessel as the primary event with mechanical damage to surrounding brain tissue. Bouman[1] has summarized the various views advanced by writers of the past century. Charcot (1858) regarded miliary aneurysms as the important basis of rupture. Pick (1910) found that these aneurysms do not develop until just before the hemorrhage occurs and then only on the side of the bleeding. Rosenblath (1918), impressed by the appearance of the brain substance in the vicinity of a hemorrhage, advanced the idea of a parenchymatous oozing from all vessels, chiefly capillaries and veins, in the region of the lesion, brought about by metabolic disturbances. Westphal and Baer (1926) upheld the view of primary softening or "angionecrosis" and attributed it to local anemia, brought about by arterial spasm. This view was later amplified by Cobb,[2] as follows: "When there is lack of oxygen in any tissue, chemical changes immediately take place. In the brain the result is edema, dilatation of blood vessels, diapedesis of red cells and necrosis; all this occurs quickly at the center of the anoxemic area." Ruhl (1927) thought hemorrhage to be always preceded by local atheromatous ulceration. Bouman believes that large hemorrhages from large vessels do occur and cites the work of Staemmler (1927) who showed that the appearance of the brain substance around a gunshot wound is identical with that around an apoplexy. Thus it is seen that no agreement has been reached from pathologic studies for the reason

that it has been impossible to reconstruct the successive stages of the whole process on the basis of the anatomic picture presented after completion. Yet it seems established that the presence of cerebral bleeding does not predicate vascular rupture.

In a masterful review of the historical development of the subject, Lange[3] concludes that now and then hemorrhage occurs from the rupture of a supermiliary aneurysm or of vascular branches that have undergone sclerotic changes, but in the great majority of cases the massive hemorrhage is the result of bleedings from the smallest vessels. "This opinion" he writes "necessarily rests largely on clinical and experimental observations as it is impossible to arrive at any definite conclusion from the purely anatomic point of view. As regards the clinical aspect of such apoplexies, they are often preceded by premonitory symptoms in the form of paralytic affections and also by vasomotor disturbances. Evidently these phenomena are functional disturbances affecting the flow of blood through those parts of the brain in which the hemorrhage is going to occur."

While it is generally believed that bodily exertion raises intracranial pressure it has not been shown that pressure within cerebral vessels is correspondingly increased. On the contrary, Cobb and Blain[4] state that "changes in the pressure of the cerebrospinal fluid in general parallel sudden changes in the diameter of the arteries, the pressure rising with dilatation and falling with constriction." Moreover, it seems definitely established that the cerebral vaso-motor control is much the same as in the circulation elsewhere and that the older idea of passive response to changes in the general circulation is without foundation.

It is known that states of stress usually produce some elevation of arterial pressure as measured by the ordinary methods, but such increase is relatively slight. Whether or not it is sufficient to produce rupture would depend, of course, upon the degree of weakening, already present as a result of localized vascular disease, and this factor is impossible of determination. Lambert and Muller,[5] working with the perfused brains of cadavers, found that the pressure required to cause rupture was four times as high as the highest carotid pressure in the living. They also found that rupture could be produced only in vessels affected by syphilis or arteriosclerosis and that this occurred in the basal ganglia.

If the theory of bodily strain as an exciting cause of hemorrhage were accepted as valid it would still be necessary, in order to establish its importance, to show that apoplexy follows stress in a proportion of cases larger than could be accounted for by coincidence. A number of studies bearing on this question have been recorded. Gintrac,[6] in 840 patients with apoplexy, found a history of unusual effort in ten. These included defecation two cases, and coitus one case. An analysis by Ernest Jones[7] of 123 cases of cerebral hemorrhage, proven at autopsy, indicated that in none did the attack come on through excessive effort. Jones found thrombosis occurring more frequently during sleep than hemorrhage, but thought the incidence of hemorrhage relatively low because many such patients die before morning and therefore are not brought to the hospital. Of 188 patients studied by Webster,[8] 126 of whom were classified at autopsy as cerebral hemorrhage and sixty-two as thrombosis with softening, only two gave histories suggesting any relationship to physical or mental strain. Perkins,[9] from a study of 801 cases of apoplexy admitted to the Kings County Hospital, concluded that "it is exceptional for any of the cerebral vascular accidents, even hemorrhage, to occur during great exertion."

Dr. Ennion Williams, at my request, has analyzed the records of 100 patients with apoplexy, admitted to the Hospital Division of the Medical College of Virginia, with particular reference to the circumstances attending the onset. In twenty-five the attack occurred during sleep and in twenty-four during ordinary work. Four began while eating, two while at stool and three patients were ill in bed. In the remainder, the attack began while loafing, either sitting, standing or walking. In none was there a definite history of extreme mental or physical exertion, but in several this factor may have been suggested. One patient stated that he had eaten a big supper, walked about a quarter of a block and fell. One had been running and had lain down in a hammock. Another confessed to being slightly intoxicated, while one other stated that just prior to the attack she had been frightened by a drunken son.

It will be seen that the distribution of attacks in this group corresponds fairly well with the time

allotted by the average person to the day's activities. Division of the twenty-four hours on the basis of these figures would allow six hours for sleeping, six hours for working, eating one hour, defecation one-half hour and loafing 10.5 hours. Such a distribution argues strongly for a coincidental relationship of apoplexy to stress and equally strongly against the notion that cerebral accidents are dependent upon an exciting factor in the way of physical behavior.

SUMMARY AND CONCLUSION

The growing prevalence of accident insurance has given increased importance to the evaluation of physical factors in the production of disease. Apoplexy has long been thought to be due to rupture of a cerebral artery as a result of physical or mental strain. Analysis of the evidence, both from the anatomical and clinical viewpoints, indicates: (1) that hemorrhage as a primary event occurs rarely if at all; and (2) that when apoplexy appears, as it occasionally does, during exertion, the relationship is that of coincidence rather than cause and effect. Cerebral hemorrhage is simply one manifestation of the vascular deterioration we call arteriosclerosis, and, though its exact mode of consummation is unknown, it is unlikely that states of stress constitute a factor of any importance in its production.

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Professional Building.

DISCUSSION

DR. BEVERLEY R. TUCKER, Richmond: Dr. Hutcheson is always interesting and stimulating. This paper is rather revolutionary—dare I say it this close to Washington where it seems revolutionary ideas are the order of the day? In most respects I agree with Dr. Hutcheson. I feel with him that emotional shocks and exertion rarely cause apoplexy. I feel also that those with plethoric faces, who are stout and good livers, are hardly more susceptible than those who look like they never had a square meal or a good drink in their lives. I have known pious preachers and Victorian ladies to have apoplexy. Further, I also agree with him that elevated blood pressure *per se* is not the cause of apoplexy. For a hemorrhage to take place there must be a damaged wall as well as an elevated blood pressure.

If there is a necrotic spot in the vessel wall rupture of the vessel can take place with quite low blood pressure. Hassin, in his Pathology of the Nervous System, says, referring to hemiplegia from hemorrhage, "the blood vessels are always changed—sclerosed, necrosed, or covered with miliary aneurysms." If there exists an aneurysm of some standing it would seem exertion may cause its rupture, but this is open to question.

Cerebral blood vessels do have vaso-motor control. This helps to keep the cerebral fluid interchanged within certain limits. This cerebral fluid interchange is disordered when a hemorrhage occurs and the hemorrhage increases not only intracranial pressure from venous blockage but also may cause increased blood pressure within the cranium. Either cerebral hemorrhage or cerebral thrombus may cause cerebral edema. Cerebral edema where sudden, as in certain cases of injury to the head, may give symptoms resembling apoplexy.

But apoplexy is a loose term if it is to cover the result of cranial injury, brain edema, hemorrhage and thrombosis. At times these last three conditions are clinically difficult to distinguish, especially in the presence of an injury to the head. I once had a case in which a woman was struck over the zygoma with a heavy lamp. She died from what I thought was a cerebral hemorrhage, but at autopsy no hemorrhage was found but an extensive thrombosis involving the circle of Willis.

I think the term apoplexy, if used at all, should exclude both thrombosis and edema and all cortical, subcortical and intracranial hemorrhages except hemorrhage into the internal capsule on one side from rupture of the lenticular striate artery. This artery is a terminal branch of the anterior branch of the middle cerebral and is known as *the artery of cerebral hemorrhage.* Rupture of this vessel occurs in syphilis and arteriosclerosis, usually in patients past middle life with elevated blood pressure. This form of hemiplegia is, as a rule, determinable by a careful neurological study of the reflexes rather than by general considerations of unconsciousness, blood pressure height, or premonitory symptoms and experiences. The pupil is more widely dilated on the side of the lesion, the abdominal reflex is absent on the hemiplegic side, there is greater flaccidity of the extremities on the affected side and many other things which, when present, make quite a safe bet that there has been a hemorrhage into the internal capsule on the side opposite the hemiplegia.

I quite agree with Dr. Hutcheson that, as things are, much confusion arises in insurance and court cases. Vertigo or loss of consciousness, or so-called stroke, may cause a fall and unconsciousness, and many an insurance company or corporation has had to pay for damages it was in no way responsible for. I was once in a railroad case in which, during a rather severe jerking of the train one night, the head of a lady was bumped. She dressed and walked around, got to her destination and carried on her usual activities for thirty-six hours and then was taken with an apoplexy and died. It was found that she ran a blood pressure of around 250 systolic and had other evidence of arteriosclerosis. I testified that, in my opinion, the blow had nothing to do with the apoplexy and that if it had it would have caused an immediate stroke. However, the attorney for the railroad got "cold feet" and compromised the case.

I think we should all feel grateful to Dr. Hutcheson for bringing this subject so intelligently and so interestingly to our attention.

THE ADMINISTRATION AND MISADMINISTRATION OF DIGITALIS.*

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Norfolk, Va.

The proper administration of digitalis is only one of the important measures used in the treatment of heart disease. Its correct combination with other therapeutic procedures is absolutely essential. Its value mainly comes from the benefits resulting from its use in heart failure. Consequently its administration is usually in the amounts necessary to cause full therapeutic effect. There are, however, reasons advanced for its use in smaller doses.

The accepted effect of digitalis on the circulation results from, first, slowing of the rate which allows greater diastolic filling, and, second, an increase in the tone of the heart muscle fibers and more prolonged ventricular contraction.

The first effect, that of slowing, is brought about by actions from two widely separated sources, namely, the stimulation action of the vagus center in the medulla, and the depressant action on the conduction system of the heart. It is this latter depressant influence of digitalis on intracardiac conduction that explains at least one-half of the virtue of the drug. The second effect, that of increase of muscle tone, increases the cardiac output. This increase of heart muscle tone and of completeness of contraction is through an action directly upon the myocardium not yet understood.

Related effects of digitalis on other portions of the body are interesting.

Its effect on edema[1] is not a true diuretic action. The diuresis produced by digitalis is entirely secondary to improvement in the general circulation. An increase in urinary output does not follow its administration to normal individuals, nor to cardiac patients without edema, nor to patients with edema due to nephritis.

For years, controversy has existed as to whether or not digitalis has a direct action on the blood vessels. Most evidence has been against such an action. Recently Dock and Tainter[2] have described constriction of the hepatic veins from digitalis action and point out that this may aid in bettering the cardiac output by relieving the over-burdened heart. This relief is accomplished by diminishing the venous return to the right auricle.

The gastric effects of digitalis have been studied thoroughly. Ever since Hatcher and Eggleston, in 1912, demonstrated that digitalis produces typical retching in eviscerated animals, evidence has been accumulating which indicates[3] that the emesis produced is a reflex effect, resulting from the action of the drug on the heart, the impulses passing from the heart to the vomiting center in the medulla. The observation and study of this reflex emetic effect of the drug revealed the presence of a cardio-enteral reflex. This is quite active in certain clinical conditions, such as coronary occlusion, angina pectoris, and cardiac dilatation, it being the cause of so-called indigestion in these conditions. At times, in cases of severe congestive failure, the vomiting arising from the irritable state of the stomach, consequent to splanchnic congestion, is liable to cause confusion in the mind of the clinician. Vomiting of this type disappears with im-

*Read before the Norfolk County Medical Society, December 17, 1934.

provement of circulatory efficiency and therefore the administration of digitalis should be instituted immediately by routes other than by mouth.

The colored vision observed after the administration of digitalis must be considered a manifestation of digitalis poisoning. It is explained by Weiss[3] as resulting from the spreading of stimulation effect on the vagus center in the medulla, to the visual centers of the mid- and hind-brain. An unique phenomenon, resulting from over-dosage, is that of colored hearing. This was described by Lowman, of Germany, in 1912. In this manifestation, colors appear through certain auditory stimuli. The sounds of various vowels or of certain musical notes produce a visualization of certain colors. These colors persist with closed eyes. This results from stimulus of the acoustic nerve, producing a disturbance of the visual centers involved in colored vision.

Digitalis is probably not responsible for the mental disturbance seen occasionally in the course of its administration. This psychosis usually occurs in old people or in the presence of severe or long-standing congestive failure. Weiss[3] has observed that its character is that of a toxic psychosis, and is identical with that seen in cardiac patients who have never received digitalis, and that the onset of the psychosis is not necessarily associated with well-recognized signs of digitalis intoxication. These and other recorded observations allow the conclusion that in this psychosis we are dealing with a cerebral circulation, which was abnormal before the use of digitalis, due to chronic sclerotic vascular or circulatory changes. Then sudden general circulatory changes are produced through digitalis and a psychosis develops because of the sudden change in the cerebral circulation, and possibly because of the lessening of cerebral edema. At any rate, considering the universal use of the drug and carelessness in dosage, one would expect that if digitalis could cause psychoses, they would be much more frequent.

We now come to the actual administration of the drug. Standardization today is dependable. Cat standardization is requested by the American Heart Association and is used by most manufacturers. Much confusion resulted from the use of frog standardized preparations, when large doses of digitalis were first used. The proper dosage, according to the patient's weight, frequently brought about either toxic symptoms or a lack of effect. Frog standardization was even held responsible for some deaths. The next United States Pharmacopeia will undoubtedly call for cat standardization. Stockton[4] writes that pigeon standardization is reliable and offers accuracy, ease and economy. Macht[5] has noted a difference in the strengths of the drug assayed under various weather conditions. Barometric changes affect the respirations and circulations of the cats being used, which affected the measurement of toxicity.

The form of digitalis used is immaterial. There is practically no advantage of one preparation of the drug over another. The solid preparations make for more accuracy of dosage in the hands of the average patient. It is wise to become familiar with one product, even to the exclusion of all others. This allows a better anticipation of its effect.

When the full influence of the drug is desired, either slowly or quickly, the Eggleston method of dosage, according to the weight of the patient, is widely used. There are, however, individual variations not dependent on weight. Levine[6] states that an average adult, who has not had digitalis, will need about thirty grains in the course of several days, if given by mouth, to become digitalized. Some will need less and some will need more. If no emergency exists, a one and one-half grain pill, or its equivalent, can be given four times a day for four to six days and then followed by a maintenance dose of one and one-half grains every day. In some individuals the maintenance dose has been found to be as great as four and one-half grains daily, but this is unusual.

Absorption from oral administration is constant and complete in two to six hours. Gold and De Graff[7] have recently shown that in some instances excretion varies with the amount present in the body. This means that cumulation shows a tendency to be a self-limited process in some cases.

McCulloch and Rupe[8] found the tolerance of children for digitalis to be somewhat different from that of adults. Infants and those up to forty pounds have been found to respond more readily than adults. Those children over forty pounds, of about four years and over, require 50 per cent more digitalis per unit of body weight than adults.

Oral administration is usually possible. If not, the initial dose may easily be administered by rectum. By this route, dosage is the same and absorption just as rapid as when given by mouth. I have found rectal administration very useful. Levy[9] ob-

tained an initial effect per rectum in an average of two and one-half hours in a series of cases. Nausea and vomiting frequently clear up after absorption of the first dose, and oral administration can be started. Intramuscular administration is usually inadequate and is very painful to the patient. It frequently causes necrosis. The intravenous use of digitalis should be reserved for quick administration in emergencies, or for special conditions where the other routes mentioned are not practicable. In using the intravenous route poisoning can easily occur if previous amounts given are not known.

Of the digitalis family, other than digitalis itself, strophanthus is the only member worth mentioning, regarding its action on the heart. Its effects on the circulation are, in most respects, identical with that of digitalis.[10] Three main differences—first, more rapid action; second, more rapid elimination; and, third, its greater impairment by the digestive juices —make strophantus useful only in certain cases. It is valuable in hypersensitiveness to digitalis. It is best used only by intravenous or intramuscular routes when digitalis effect is needed in acute heart failure. It is contraindicated in recent digitalis treatment because of the slow elimination of digitalis.

Before using digitalis, every case should be studied carefully as to etiology, and the anatomical and physiological changes should be fully determined, along with their correction and proper treatment. Its use in various circulatory conditions is best outlined by division into two parts: first, the treatment of the cardiac arrhythmias; and, second, the treatment of heart failure with normal heart mechanism.

In auricular fibrillation, with or without congestive heart failure, it is frequently of striking benefit. Here a knowledge of the etiological factor is of great importance. It is of great value in the arrhythmic complications of the rheumatic fever group. On the other hand, the senile or arteriosclerotic group of fibrillators respond poorly to digitalis, and those due to hyperthyroidism need Lugol's solution and surgery rather than diagitalis, it having little or no effect on the fast ventricular rate caused by thyrotoxicosis. Quinidine has replaced digitalis with excellent results in auricular fibrillation with reasonably sound hearts, as well as in some other arrhythmias. In other selected cases, a combination of the two drugs is advocated by some. But in the presence of any complication, such as increased ventricular rate, or failure, digitalis remains the perfect aid.

It is also indicated in auricular flutter where it transforms the condition to fibrillation,[11] but in paroxysmal tachycardia Christian, Levine and Fraser all agree[12] that it is practically powerless to slow the rate. It can sometimes be used here to advantage as a prophylactic measure against complications.

In a partial heart block, it can be easily misused because of the danger of causing complete auriculoventricular dissociation. But in partial heart block, with frequent and disturbing attacks of complete block, digitalization will complete the block permanently, and the patient will become more comfortable.[13] Recently Schwartz,[14] even in complete heart block, has advised full digitalization, stating that the improvement in efficiency of systolic contraction results in real benefit to the patient. This may not become necessary in all cases of complete heart block, and is distinctly contraindicated in the presence of the Adams-Stokes syndrome.

Digitalis is contraindicated in such rhythm disturbances as sino-auricular block, ventricular escape and nodal rhythm. This is because vagus stimulation would cause more pronounced slowing and further circulatory impairment.

Pulsus alternans and gallop rhythm, often present with marked ventricular dilatation, are both indicative of a failing heart and digitalis is urgently needed.

The question arises whether the presence of premature contractions is a contra-indication to beginning the use of digitalis, since it is well known that large doses of digitalis cause their occurrence. In congestive failure the presence of premature contractions may be safely disregarded and digitalis used. However, a single premature contraction, occurring during digitalization, not previously being present, or the occurrence of bigeminal rhythm, call for immediate discontinuance of the drug.[15]

In those patients with normal rhythm having congestive heart failure, the use of digitalis gives impressive results and its full effect should be used. Generally speaking, *the* indication for digitalis administration is cardiac decompensation, the only exception being auricular fibrillation, which must be considered as a decompensation of the auricles.

There are, however, patients with normal rhythm having circulatory disturbances but without decom-

pensation, who may or may not be benefited by digitalis. Its use is controversial when there is normal rhythm, in such conditions as hypertension and hypotension, coronary disease, coronary thrombosis, old age, various infections, and in conditions relating to surgery. But let it be fully understood that if congestive failure or arrhythmic complications arise in any of these conditions, full digitalis effect is immediately essential. The only absolute contra-indications of digitalis are the presence of the Adams-Stokes syndrome in heart block and hypersensitiveness.[16]

In valvular defects, with decompensation, most impressive results are obtained by digitalis, but without decompensation there is no indication for its use.

In coronary thrombosis, Pardee[17] and Levine[18] have separately commented on the inadvisability of digitalis therapy. Levine attaches his unfavorable results to the further irritation of an already irritable ventricle.

Digitalis is not contra-indicated in angina pectoris, or in coronary disease, but the consensus of opinion is much against its use. It will not relieve angina nor any symptoms of pure coronary disease, but may be used without fear to relieve congestive failure or if fibrillation occurs. My own feeling is that in these uncomplicated conditions it will do no good and is capable of doing harm. Fenn and Gilbert[19] have shown that digitalis is capable of producing anginal pain by vaso-constriction action on the coronaries. This action of digitalis will not occur in every case, nor can its occurrence be predicted in any given case. Brooks,[19] in his book on angina pectoris, writes that he believes digitalis commonly increases the frequency and severity of this symptom-complex.

Regarding blood pressure changes, it is generally conceded, since the work of Sahli and others, that blood pressure is little altered by digitalis in therapeutic doses, and of no value in uncomplicated hypertension or hypotension.

For years it has been used as a so-called heart tonic by some. Christian[20] has made observations regarding digitalis increasing heart efficiency in elderly people without heart enlargements, but in whom circulatory efficiency is lessening. There is no actual failure but only anticipation. Accepted usage of digitalis in these cases is in full doses if it is needed at all. Christian's observations show that in the aging process, the heart muscle loses water. In all these cases he advocates digitalis in small doses over long periods, counteracting the dehydration of the myocardium and increasing its efficiency. In my own hands, over a period of some years, these tonic doses have shown beneficial effects.

Christian[20] also goes further than the present accepted indications of digitalis in believing that it helps to inhibit cardiac hypertrophy. He believes its use reasonable in anticipating future cardiac enlargement with its further serious end-result of decompensation. The greatest number of patients, falling into this class, are those with hypertension; next, are those with a diastolic murmur of some sort; and then are those with a systolic murmur and a rheumatic history. In all these and in any hypertrophy he advises less exertion, and uses less than usual doses of digitalis for the remainder of the patient's life. By doing this, he believes cardiac enlargement is retarded, and greater physical activity is possible for these patients.

Much has been observed and written regarding the use of digitalis in infections. We know that the drug has very little effect upon the rapid heart rate of fever; in fact, its effect seems to be neutralized by an elevated temperature. In general, then, its use is not indicated in infections or in the majority of the infectious diseases.

Recently Ganter,[21] in Germany, in investigating circulatory collapse in infections, observed that toxins acted to cause dilatation of the larger arteries, and that, while compensatory mechanisms of the body can maintain normal pressure for a long time, finally the return flow to the heart is seriously impaired. He concludes that in circulatory collapse in infections quick vasoconstrictor effect is desired, and not the slower central or heart effect of digitalis.

In rheumatic fever or rheumatic heart disease, only heart failure or arrhythmic complications are indications for digitalis, and before they occur there is no reason for its use. For years it has been used with caution in diphtheria. Recent work by Stecher[22] strictly contra-indicates its use on account of the various degrees of heart block caused by the diphtheria toxin.

In pneumonia its use is very controversial. Stone,[23] of the Medical Corps, U. S. A., made a report, based on 871 cases handled in 1918, all of

whom were fully digitalized, and concluded that its use is of distinct value. There were no over-effects of digitalis, such as heart block, and he felt that the general circulatory effects were beneficial in sustaining the heart in its time of severe stress. These patients were of both the broncho and the lobar type.

White,[24] in 1927, reported regarding 221 unselected cases of the lobar type, finding a definitely higher mortality among those not receiving digitalis, or receiving it after congestive failure signs had begun.

Conversely, Randolph,[25] in 1929, expressed himself against the use of digitalis in pneumonia. He states that it should not be used until actual failure of the heart muscle occurs, that the danger of collapse of the peripheral circulation is of greater importance, and the failure of digitalis to control the rate of the heart in fever speaks for itself.

And Wyckoff,[26] in 1930, reported a well controlled and thorough study of 835 cases of lobar pneumonia, concluding that the results did not justify continuing the routine administration of digitalis in lobar pneumonia.

Porter and Newburgh suggest the use of digitalis as routine, and impress early and quick administration so the patient is soon partially digitalized. Just before or when effects appear, the drug is discontinued as long as the patient's condition indicates its use is not necessary. From my own experience, this partial or near-digitalization seems to be the best procedure.

White,[27] in his textbook on heart disease, concludes, regarding digitalis in pneumonia, that since the right ventricle is under unusual strain, and since apparent benefit has been derived from routine digitalization in pneumonia, its use is of distinct value, but that the question of its use will remain undecided by many until more complete data is at hand.

At times digitalis is necessary in surgery. The majority of operative patients have normally functioning hearts. It has been shown that digitalis shows no strengthening effect on the normal heart. In fact, Marvin and Pastor[28] show that digitalis will decrease the efficiency of a normally functioning heart, particularly where arteriosclerotic changes are present. In routine pre-operative care, therefore, the use of digitalis should not be encouraged. Its use should concern only cardiac conditions indicating it.

Post-operatively, it is certainly not indicated unless congestive failure exists or is anticipated, for the reason that its effect cannot be expected in any immediate collapse. Congestive heart failure must be distinguished from peripheral circulatory failure. Digitalis is as useful in the one as it is useless in the other. The classic findings in decompensation of dyspnea and cyanosis, with increased venous pressure, are quite opposite from the findings in peripheral circulatory collapse. In this latter, the splotchy skin cyanosis, lack of dyspnea, etc., result from a low venous pressure, decreased blood volume, insufficient venous return, and low blood chlorides. It follows that digitalis is of no avail in correcting these changes, while other recognized procedures will.

In closing, let me say that much digitalis has been wasted in the past, that many patients have been harmed by it, and many patients made miserable by its toxic effects with no resulting benefit. On the other hand, however, digitalis is one of the most valuable of drugs, and its intelligent use, in combination with rest and other measures, is a real triumph in the practice of medicine.

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SPLICING CAST TO CORRECT ANGULATION AND LENGTHEN LEG.*

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In treating fractures, sometimes the simplest measure is of value in securing good alignment of bones. There is a treatment of fractures of the leg, to which I wish to call your atteention, that is sometimes valuable, especially in treating oblique fractures of the leg.

When reduction of a fracture of the leg has been attempted, a roentgenogram will often show bowing at the site of fracture. When this occurs if the cast

Fig. 1.—D. S. (a). Fracture of leg after attempted reduction and application of cast.

is cut transversely, completely around the limb near the point of fracture, angulation can be corrected, if the cast is firm. After the cast is cut the portion of the leg below the cut in the cast is moved away from the side where the concavity of angulation occurs. The cast on the other side holds firm. By making this motion a gap of one inch, more or less as desired, is made on the side of the concavity of angulation. The gap is then filled in with plaster, care being exercised to prevent filling in to too great depth and making pressure. The limb is held in this position until the cast hardens. This is done within twenty-four hours after the original cast is applied.

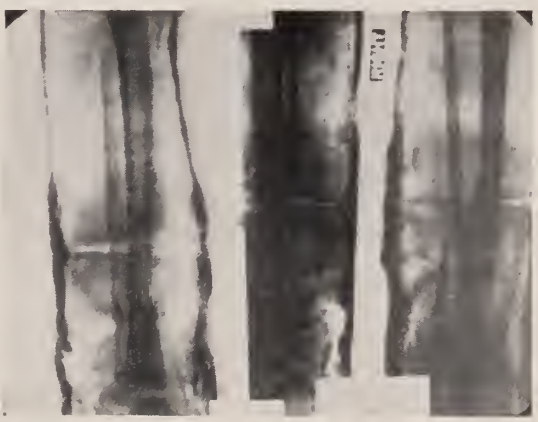

Fig. 2.—D. S. (b). After correction of angulation by splicing cast.

This method has been used at the Lewis-Gale Hospital a number of times with pleasing results.

As much as two inches overriding can be corrected by gapping cast on one side for one inch and filling in; then after the fill-in has hardened, the

*Read at a meeting of the Roanoke Academy of Medicine on November 6, 1934.

cast is cut in a new area near the first cut and gap made on the opposite side. This will give one inch lengthening, and two inches lengthening can be secured in the same manner.

Fig. 3.—R. M. (a). Fracture of leg after attempted reduction and application of cast.

No anesthesia is necessary. The patient experiences very little pain, the results are much more definite and more can be expected than if the entire cast is removed and a re-setting is attempted, since the same amount of overriding and slight angulation often occurs again, for an oblique fracture has a tendency not to remain in place, but to slip into the old line of deformity.

I have two cases to show you:

1. D. S. On September 9, 1934, an attempt was made to reduce a fracture of the tibia and fibula; a deformity with a backward bowing at the site of the fracture was noted on the X-ray film. The next day, without anesthesia, the cast was cut and filled in as shown on the X-ray film, with a so-called perfect position.

Fig. 4.—R. M. (b). After correction of angulation by splicing cast.

2. R. S. Had an oblique fracture. An effort was made to reduce it, and X-ray revealed a backward displacement at site of fracture. The next day the cast was cut and filled in, without anesthesia, and a good reduction was secured.

Conclusion: This method makes a second anesthesia unnecessary; produces very little pain, and is an economic measure from the standpoint that it obviates the necessity of applying a second cast, and sometimes makes open reduction unnecessary.

Lewis-Gale Hospital.

MYOCARDOSIS, A PROBLEM OF PREVENTIVE MEDICINE.*

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This study is directed to the general practitioner, the "Country Doctor" primarily. The writer makes no claim as to originality. He has recently had the privilege of reading "The Failing Heart of Middle Life," by Hyman and Parsonnet, published by F. A. Davis Co., 1933. After this reading, he has been impressed with the fact that many of his colleagues do not use their God-given powers, and are prone to give up in despair in this day of mechanics and laboratory. If this study enables the doctor, laboring in the far away places, far removed from medical centers and hospitals, to regain his confidence, the writer shall be amply repaid.

In some respects, it is unfortunate that diseases of the heart have become a highly specialized field of medicine. The general practitioner, the "family doctor," for lack of time, unable to make intricate studies with the aid of precision instruments, the electrocardiogram, etc., is beginning to feel out of

*Read before the Northern Neck Medical Society, May 24, 1934, at Warsaw, Va.

his depth, and is discouraged by the growing conviction that he is no longer competent to deal with cardiac cases. This is not as it should be. In the vast majority of instances the family doctor has first contact with such cases. With these remarks, I shall endeavor to show that the general practitioner, by intelligent and judicious study of his cases, by careful history taking, the employment of a stethoscope, watch and sphygmomanometer, is capable of arriving at a correct diagnosis of cardiac disease, and on that basis can outline the proper treatment in most instances. By this means, his confidence can be restored, and he will know when men specially schooled in this science should be called upon for advice.

The health and proper functioning of any organ is dependent upon an adequate amount of nutrition, supplied by circulating blood. The heart is a pump; the wall or myocardium must be supplied with incoming blood, so essential for muscle metabolism, and at the same time the removal of waste products must be fully as complete. In addition, and no less important, but too frequently not given the proper accord, is the state of activity of the myocardium.

You will not be burdened with an anatomical description of the heart or coronary circulation; suffice it to state that nature has provided the heart with physiologic devices to insure safety of operation under the most trying circumstances, and has supplied more than four times the necessary degree of circulatory exchange than actually required.

In recent years there has been a growing menace from cardiac disease in the prime of life, and it is important that the "family doctor" should know the signs and symptoms of those middle-age forms of heart disease, that do not manifest themselves by clear-cut physical signs. Frequently there is no murmur, and no abnormality of rhythm, despite the existence of severe myocardial degeneration, as shown on the autopsy table. To this form of chronic heart disease, due to degenerative changes normally present in every individual reaching the half-way mark of life, Reisman applied the term myocardosis. Heretofore, the term chronic myocarditis was used to designate the wearing out process, as well as the alterations effected by disease, much to the dissatisfaction subconsciously voiced by many authors of the past decade. Myocarditis is associated with a background of inflammatory phenomena, such as seen following an acute or sub-acute infections or toxic process. Myocardosis is the term applied to the heart which has become inefficient as a result of a disturbed coronary circulation and poor nutrition of the myocardium. Myocarditis is a disease of the early decades, myocardosis is seldom seen before the age of forty. Myocarditis is a disease resulting in inflammatory changes which have more or less incapacitated the patient over a period of years; myocardosis is a condition affecting those individuals who have previously enjoyed active and vigorous lives. Another dissimilarity is, whereas chronic myocarditis is apparently better withstood the earlier it occurs, the opposite is true of myocardosis. The senocardial syndrome experienced in the fourth decade may be fatal, but when it occurs in the sixth or seventh decades it may be relatively innocuous.

From a purely histopathologic standpoint, the development of myocardosis is one associated with, and apparently dependent upon, the gradual impoverishment of the parenchymatous element of the heart muscle. Whether this lack of nutrition is due to changes in the vascular system supplying the heart muscle or to changes in the composition of the blood itself, the end result is the same.

Maximow classifies the coronary artery as a combination of elastic and muscular type. As age advances there is a progressive development of the arterial wall in response to a normal increased demand for work. Hypertrophy and hyperplasia of tissues is the normal physiologic method for human organs to respond to this increase, and on the premise that when this process fails for one reason or another and degenerative changes supervene, then they are of pathologic import. Also, one may infer that while hypertrophy and hyperplasia are physiologic processes when these occur in response to a normal functioning of an organ, they become pathologic when it is the result of abnormal function. What might be considered a physiologic increase at fifty years of age would be definitely pathologic at ten, twenty or thirty.

In this physiologic process, while the wall of the vessel feels somewhat harder and is not as collapsible as in youth, the vessel nevertheless has not lost its elasticity. This is indicated by the undulating, wrinkled appearance of the elastic tissue elements, and the vessel does not show grossly the tortuosity seen in those cases where lengthening takes place

in response to lost elasticity. The lumen shows no narrowing.

The term coronary sclerosis is used here interchangeably with coronary arteriosclerosis and coronary atherosclerosis, and may be defined as a pathologic thickening of the wall of the coronary arteries due to an increase in fibrous tissue, particularly in the intima, which undergoes secondary degenerative changes. Included in the term are all those lesions leading to a thickening of the walls of the coronaries, whether they be due to a pathologic exaggeration of those factors responsible for the physiologic change, or to any other etiologic agent.

As might be anticipated the branches of the left coronary artery show a more marked involvement; and of these the anterior descending branch exhibits the most extensive, most frequent and at times the only involvement in the sclerotic process. This is due to the fact that the left ventricle, supplied by this artery, does the greater part in maintaining the peripheral circulation. Increases in peripheral resistance to flow of blood are immediately translated in hypertrophy of the left heart, with a resulting increase in blood flow through the coronary branches supplying this portion of the myocardium. The increase in blood flow causes a stretching of the coronaries, with a greater than normal strain on their elastic tissues, and, as postulated by Thoma for general arteriosclerosis, strain hypertrophy of the intima occurs with subsequent changes.

Another reason for the more extensive involvement of the left coronary is that in this artery the deep branches leave the main vessesls from the undersurface and at right angles, as pointed out by Whitten, and penetrate the muscle, holding the large branches, such as the anterior descending, in a rather fixed position. These points of fixation receive the stress and are the most frequent sites for sclerotic changes.

Predisposing factors in the production of coronary sclerosis are age, sex, heredity, and constitutional influences.

Coronary sclerous may occur at any age, although the vast majority of instances occur in middle adult life and old age. The highest incidence is seen in the seventh decade, followed by the sixth, eight, fifth and fourth.

Below the age of fifty years, the incidence in females is between 40 and 45 per cent, males between 55 and 60 per cent. After fifty years, however, the percentage of males increases, reaching 75 to 80 per cent.

O'Hare, in 300 patients with arteriosclerosis, found a family history of vascular disease in 68 per cent. Nortensen, in a study of 900 persons, concludes that heredity is a positive factor, but is attributal to hereditary, endocrine, or protein metabolism disturbances. Moschowitz believes that no hereditary factor is present, but that environmental influences are preponderantly responsible.

William Mayo stated that coronary disease is an increasing factor in the death rate among physicians, surgeons and other professional men. He explained this on the basis of high-tension work and sedentary life. Moschowitz finds that people who develop hypertension and arteriosclerosis conform to a constitutional type; physically they are soft-muscled, short-necked, non-athletic and over-weight. Emotionally, they are tense, irritable, high-strung and, more often than not, successful in their fields of endeavor.

In a general way, the experimental and clinincal data put forth as having a direct etiological significance in the production of coronary sclerosis may be classified as follows: (1) infections or toxins, (2) chemical, (3) mechanical, (4) metabolic and endocrine, (5) arteritis.

All of these factors are of importance; however, for sake of brevity and because of the scope of these remarks, only two will be discussed, namely (1) the mechanical, (2) metabolic and endocrine. Early myocardosis is more or less the result of aggravation of mechanical function and disturbed metabolism.

Mechanical: Klotz has shown that the blood pressure does not necessarily have to be permanently above normal. An acute rise for a short period of time frequently repeated would have about the same result. This is well illustrated in the type of individual who develops arteriosclerosis. With each additional emotional outburst the blood pressure temporarily rises, over-stretching the vessel. Adami's summation claims arteriosclerosis may ensue when, on the one hand, the artery has undergone weakening and the blood pressure is normal; and, on the other hand, the artery has no preliminary degeneration of the media, and the blood pressure alone is above normal.

Metabolic and Endocrine Factors: Chief among

the metabolic products to be blamed for the production of arteriosclerosis is cholesterol. Shapiro sees the problem as one which resolves itself into a determination of the factors influencing the metabolism of cholesterol, and which are responsible for its deposition. He studied the effect of the removal of those glands of internal secretion believed to control or influence fat metabolism and concluded that deficiency of thyroid, spleen, or gonads augments an excess of cholesterol and thereby accelerates the formation of atheroma. Adrenalectomy failed to produce this condition. Rickett believes that adrenalin acts in producing arteriosclerosis by increasing blood levels.

The characteristic lesion of coronary sclerosis is a nodular thickening of the intima, due to a deposition of fibrous tissue so as to reenforce the wall against over-stretching. The pathologic changes which ensue are those of regression, namely, tissue degeneration. As age advances there is a diminished blood supply to the media due to faulty function of the vasa vasorum of the adventitia. This occurs as a result of infection or other chemical and toxic factors acting through the blood stream. The intima receives its blood supply by diffusion. Eventually, an inability of the plasma to penetrate to the deepest portions of this fibrous connective tissue occurs and hyaline degeneration takes place, followed by necrosis and fatty infiltration. At this stage, they appear grossly as opaque yellow elevations in the intima which causes a narrowing of the lumen, hence retarding the flow of blood. This produces more strain on the particular point involved and increases the degenerative process so that the plaques may break down, become soft and friable, even ulcerate, leaving a rough surface upon which thrombosis may develop.

As the nodose protrusions into the lumen develop they cause varying degrees of obstruction to the flow of blood through that portion of the vessel, with resultant deficiency of nourishment to this particular area of myocardium. If the obstruction in the large branch is of gradual development so that an adequate blood supply to the heart muscle is maintained either through that vessel itself or through the establishment of a sufficient collateral anastomotic circulation, no gross or microscopic changes may be visible. However, when the obstruction is more acute, some of these fibers may undergo anemic necrosis and be replaced by fibrous tissue scars. The heart muscle in these cases gives the typical microscopic appearance of a diffuse myocardial fibrosis. Dependent upon the size of the artery involved is the amount of myocardial damage and its resultant impairment of function.

Presented by the startling fact that heart disease leads all other causes of death, notwithstanding the tremendous publicity given to cancer and tuberculosis, many persons have besieged their doctors to examine them and to allay their fears of sudden death from heart failure. With a knowledge of heart disease, founded for the most part upon the presence or absence of murmurs or irregularities of the pulse, the busy practitioner learned that this yardstick of knowledge was not sufficient. Having measured a patient by the older standards, and having found them normal, thereby assuring him that his heart and blood-vessel system were all right, it became disconcerting to explain to the family the man's sudden death on his way home. This sad experience has unfortunately been a rather frequent occurrence, yet a reconsideration of all the facts of the case made afterwards has not given the doctor any clue that would explain this accident. Apparently, therefore, the older methods utilized by the profession have not been sufficiently accurate or informative to permit an examination of a more satisfactory type.

It is a common occurrence to hear an individual approaching middle life take the opportunity of bringing into conversation the fact that he is "apparently not so good as he used to be." This is seldom heard in the doctor's office, but on the courthouse green, golf course, and the club. If at all encouraged, this individual will disclose further evidence of his inability to cope with the every day stress and strain of his particular occupation. With a nod or two of his head the doctor may pat him on the shoulder and dismiss the entire matter with a gesture to the effect that "the old boy is getting on and sometime when you get a chance, come around and see me." The latter may be recalled to the doctor upon learning of this individual's sudden death, with a newspaper diagnosis of "acute indigestion." While it is true that advancing age may be responsible for many such symptoms, when this condition occurs at the zenith of productive activity, it should become a matter of careful medical inquiry.

When a man of forty-five complains of infirmities which rightfully belong to the sixth decade, the attention of the physician should be centered at once upon the possible etiology of such a change.

Even the most minute deviation from the established cardiac mechanism due to an inadequate coronary circulation may be associated with a chain of symptoms, subjective as well as objective, so striking as to arrest immediate attention. The clinical picture presented by patients passing through such changes of circulatory balance has within recent times been recognized and fully established as a separate and distinct symptom complex.

It is indeed interesting to note that while this condition has existed from the most remote time, a true comprehension is a matter of comparatively recent development. This may be due in great part to the fact that the symptoms arising from such change were seldom associated with or attributed to cardiac origin; much more frequently organs far removed from the actual pathology were held responsible. Only one example need be cited here. For many years medical literature was replete with graphic descriptions of a clinical picture known as "acute indigestion." This diagnosis harbored the most tragic possibilities of sudden death. The close association between the eating of a more or less heavy meal and the sudden onset of epigastric pain of a peculiar type associated with nausea and sometimes vomiting rounded out the picture. Many such cases died immediately or soon afterwards, having passed through a period of agonizing pain. If he did not die promptly he was liable to have several such attacks, and he was known thereafter to be subject to "spells of acute indigestion." As late as 1909 "acute indigestion" was considered as a gastro-intestinal disturbance. It was not until 1910, when two Russian physicians, Obrastzow and Straschasko, reported an analysis of a series of such cases, that the true pathologic background of "acute indigestion" became known.

In like manner, sudden attacks of dyspnea after moderately severe effort were consigned to diseases of the respiratory tract.

Also, the surgical profession has been directed towards a perplexing abdominal condition which simulated, in many respects, acute surgical emergencies. From the purely surgical point of view, the presentation of sudden acute abdominal pain, rigidity, temperature, leucocytosis, and characteristic facies all serve to render this diagnosis a logical one. Many a physician faced with such a condition must lean to surgical intervention, but when such incidents arise in the middle and advanced periods of life the differential diagnosis is made more difficult, because the entire symptom complex may be due solely to coronary insufficiency.

So gradual may be the onset of symptoms depending on the beginning failing heart and blood-vessel system, that only the closest questioning and scrutiny of the individual will demonstrate its presence or absence. The question naturally arises as to the exact time or age of beginning middle life. No definite time can be determined as this period apparently has the most flexible limits. Suffice it to state that beginning middle life should be dated from a time when change of function manifests itself, from which a beginning wearing down of the machinery can be definitely inferred. Middle life is thus a physiologic rather than a chronologic period.

MASQUERADES OF THE FAILING HEART

Gastric: Where the individual has enjoyed good health and has no record of previously sustained damage to the cardio-vascular system, the clues leading to a diagnosis of oncoming myocardosis may be very scanty. At times symptoms may be referable to other portions of the body such as, for example, complaints relating to the gastro-intestinal tract. Epigastric distress, without frank pain, and a sense of fulness on arising from the dinner table may be the only subjective finding. When this has not previously occurred, and in the presence of a negative modern gastro-intestinal survey, it should not be dismissed lightly.

Insomnia may be the presenting symptom and here the family history is important. If this condition is common to the other older members of the family, then it may be dismissed. However, if this is something entirely foreign to family habits, insomnia is of significance.

Fatigability: Increasing fatigability is one of the most common and early manifestations of myocardosis. It may be produced equally by physical or mental effort. When pronounced, constitutional disease must be first eliminated. When a diagnosis eliminating anemia, primary or secondary, malignancy, diabetes, syphilis, or tubercular involvement has been made, myocardosis is likely the cause.

"Ergophobia": The sense of inability to perform

a certain task even before it is attempted is a peculiar characteristic. This psychologic attitude, manifested as an anticipatory fear of effort, represents an element of subconscious fear, rather than a disinclination to perform a certain task.

Pathologic "Tiredness": This is especially true of those of sedentary occupation; the familiar picture of the "brain fagged" individual being "too tired" to take even a simple exercise.

Personality Changes: This is of rather indefinite character, and the examiner must rely on the testimony of those closely associated with the individual under consideration. However, where an individual has formerly been of a careful and amiable disposition, and becomes morose and tyrannical, this finding may be considered as an additional symptom along with the other findings of myocardosis.

Anorexia: Another ill-defined symptom, but when it appears suddenly in an individual with a reputation of being a hearty eater, he should be studied for possible signs of early heart degeneration.

Mackenzie demonstrated that the symptoms of heart disease might be traced back many years before the accepted signs of the condition made their appearance. The inference is that sudden death from heart disease, which occurs in apparently healthy individuals during the middle-age period, would be preventable if the vague symptoms, which all of these individuals have, could be properly recognized.

Major Subjective Symptoms of Heart Failure

Three symptoms stand out as the earliest to develop, sometimes one, and sometimes another would be given as the chief complaint. Frequently these can be traced back for many years, depending upon the skill of the questioner in eliciting all the facts. This triad consists of dyspnea, palpitation, and substernal discomfort.

Dyspnea: The onset of dyspnea after effort is always a vague and difficult symptom to interpret. Just when this breathlessness, which comes on after various degrees of exertion, ceases to be a normal physiologic response and is a pathologic manifestation, may be a point of nice distinction. The problem is made more complicated by the unconscious resistance of the individual to acknowledge constitutional depreciation. Pride of physique is reluctantly abandoned by every man; to confess deterioration, to admit that he is a "has been," is made at great sacrifice to personal ego. Many, upon being questioned in regard to shortness of breath, will evade a true estimation of its occurrence, suggesting that it is a natural phenomena, and hence of no especial significance. When the question is asked about the reaction experienced after stair-climbing the answer often given is, "that one must expect to get out of breath after such effort." The difference between the two sexes is significant in their reactions to questioning. Women in general, tend to emphasize symptoms to the point of unconscious exaggeration, whereas men tend to underestimate them.

Evaluation of the dyspneic factor is of utmost importance. The examiner must discover if it is more difficult for the patient to climb the same flight of stairs now, than formerly. Due regard must be given to individual psychology; frequently the physician must take the patient into his confidence, and explain that admission of this lessened activity is no disgrace, while evasiveness and failure to admit such a handicap may lead to disastrous consequences. The late Dr. G. A. Friedmann used to warn his patients not to be heroes, that the time for heroism was never in a doctor's office while a diagnosis was being made. The important thing to determine is whether the expenditure of a certain amount of effort produces dyspnea now, when formerly the same effort produced no such result.

Palpitation, or heart consciousness, is the second symptom of early myocardosis. This is a subjective phenomenon, and the examiner is dependent upon the descriptive ability, the intellectual capacity, and the emotional reactions of the individual to express himself. Heart consciousness is usually described as varying from a mere awareness of the heart's activity, to painful pounding in the chest. Thumping, skipping, fluttering, knocking, shivering and numerous other designations are given to this sensation. The important fact is that, in the early stages of myocardosis, the sudden onset of palpitation after effort of the habitual, or customary, type should be regarded as specially significant, even though it may appear in individuals presenting no other cardio-vascular signs. The Witkin Foundation found that 81 per cent of the cases presenting this complaint had associated myocardial or vascular changes. Occurring in active and vigorous individuals of the middle-age group, it cannot be

lightly treated, as it forms either alone or in combination with the other two great symptoms, dyspnea and substernal distress, one of the unmistakable milestones in the onset and progress of the degenerative changes developing in the cardio-vascular system.

Substernal Distress: Of the three important symptoms of early myocardosis, probably the one fraught with the greatest danger is that of substernal distress. Apparently these sensations vary from a mere feeling of heaviness over the upper part of the chest, to that of a terrible vise-like constriction, experienced in certain forms of angina pectoris. The peculiar localization of the pain is of interest, in that patients invariably point to the mid-sternal area, rather than to the precordium. Here again, as in palpitation, the examiner depends upon the ability of the patient to express his complaint. At other times the localization of the pain is quite varied, namely, over both clavicles, both upper areas of the chest, the lower end of the sternum and the subscapular areas. As with dyspnea and palpitation, substernal distress is experienced after effort, which formerly did not produce this sensation.

Substernal distress is unquestionably the complaint that causes the patient to seek medical aid. Whereas dyspnea and palpitation may be considered by an individual to be his normal response to physical exertion, substernal pain immediately causes no little degree of alarm and apprehension.

Objective Manifestations in Early Myocardosis

In no branch of medicine may the objective demonstration of a beginning disease process be so elusive as in the early stages of myocardosis. The subjective phenomena far outweigh the objective physical findings. When there are demonstrable changes in the cardio-vascular system, the process can no longer be considered early. At the same time, however, certain small deviations from the normal, when taken into due consideration with the information elicited by careful history-taking, may confirm a presumptive diagnosis of myocardosis.

Functional Tests for Cardiac Reserve

In early myocardosis, there is usually no change in the electrocardiogram, or in the X-ray examination of the heart and great vessels. Neither are the blood pressure readings nor laboratory data materially altered. Therefore at this time it is only necessary to consider the tests for estimating the "strength of the heart" and the role of function tests assumes primary importance. The dictum that "altered function invariably precedes alterted physiology" is perhaps no better illustrated than in this disturbance.

Myers has shown that estimations of vital capacity may be used in determining loss of myocardial reserve power. When diseases of the lungs and mediastinum have been eliminated, this test is of considerable value. The procedure is quite simple and consists of the patient blowing water from one bottle to another, as devised by Pfluger. Rehfisch pointed out that the amount of expired air was less in the prone position than standing, the usual difference being about 10 per cent. The greater the degree of myocardial insufficiency the greater this ratio will be. Badly decompensated patients, for example, are unable to lie prone because of the dyspnea; in this condition the standing figures may exceed the prone values by as much as 1000 per cent. In beginning myocardosis, when the degree of insufficiency is slight, this test may yield valuable information; when there is a difference between the two tests, a definite loss of myocardial reserve is suggested.

Pulse Rate Tests: Of importance is the change of pulse rate after exertion. Such function tests have as their basis two factors in so far as the pulse rate in concerned—first, the degree of acceleration after a measured effort, and, second, the time interval required before its return to the resting rate.

The Kaufmann formula for the middle-age period designates a 25 per cent acceleration. For instance, a resting pulse rate of 80 increasing to 100 after effort shows normal reserve. Any percentage over the 25 per cent is considered presumptive evidence of myocardial deficiency. Resting pulse rates of over 90 in men more than forty years of age, and rates of more than 100 in women over forty years of age are also considered presumptive evidence of early myocardosis. This reading may be accepted if hyperthyroidism has been excluded.

The second phase of utilizing the pulse rate for functional efficiency is the length of time required to return the pulse rate to resting rate after exercise. An arbitrary figure accepted by some observers is five minutes. If the elapsed time is more than

five minutes there can be no question about loss of myocardial reserve.

Blood Pressure Tests: While the blood pressure phenomena occurring in young adults vary after activity and are difficult to interpret, this reaction in middle life and older age groups is much simpler and falls within certain well-defined clinical classifications. In otherwise normal individuals of from forty to fifty years of age, a rise in blood pressure will depend to some extent upon the occupation. An increase of systolic pressure up to 20 mm. is considered within normal limits. Amounts greater than this occur in hearts of low functional reserve, and suggest the changes found in myocardosis.

Vagal Response Test of Rehfisch: Normally, with each inspiration there is an acceleration of the pulse rate and with expiration there is a decrease. Vaquez and Kaufmann state that this phenomenon of the heart is lost in beginning failure. The Rehfisch test is performed as follows: Having obtained the patient's pulse rate, he is instructed to take as deep a breath as possible, and to hold it as long as he is able. In normal individuals up to fifty-five or sixty years of age the pulse rate will immediately fall, sometimes as many as 15 to 18 beats per minute. In the presence of myocardial change, the pulse rate may not fall, but will actually show an increase. In the badly damaged heart, for example, the breath holding test may be done with difficulty because of the dyspnea suffered by the patient. Rehfisch concluded that, if an individual could hold his breath long enough to reduce the pulse rate, the myocardium is more or less functionally intact. So far as the middle-age period is concerned, this point, if readily discovered, offers considerable evidence of early myocardosis.

The purpose of this paper has been to develop the syndrome of early myocardosis as one which may be recognized through the ordinary methods of examination, and thereby prevent such sufferers from being dismissed from the doctor's office with a clear label pasted on his record. It is the wish of the writer to consider this subject as a problem of preventive medicine, because at no stage of the failing heart can the doctor be of more service to the patient, family and community. The advanced types of myocardosis have been purposely avoided. Here the diagnosis is of no great difficulty, and, when recognized, the damage has been done and treatment, even at its best, is mostly futile.

Remembering that, even in its very earliest stages, a failing heart may show some slight deviation from the normal, it is the duty of every physician, upon finding this slight defect, to consider it with significance and exhaust his means to make a definite diagnosis. Even as with cancer, the sooner myocardial weakness is recognized and proper treatment instituted, the better the prognosis. The public should be informed by suitable legitimate propaganda the need for periodic health examinations, especially those individuals approaching middle life. In this way, many instances of beginning cardiac disease will be recognized, and, with correct therapy, many will enjoy more years of productivity and usefulness.

CONCLUSIONS

Heart disease leads all other causes of death, and in recent years there has been a growing menace from sudden acute cardiac failure in the prime of life.

The term chronic myocardosis is used to designate the wearing out process of the heart muscle, due to degenerative changes normally present in every individual reaching the half-way mark of life, as differentiated from chronic myocarditis which designates the alterations effected by disease.

The older methods utilized by the profession have not been sufficiently accurate or informative to permit an examination of a more satisfactory type.

The major subjective symptoms of heart failure are dyspnea, palpitation and substernal distress.

The dictum, "Altered function invariably precedes altered physiology," is perhaps no better illustrated than in this disturbance; therefore, the role of function tests in estimating the "strength of the heart" assumes primary importance.

In its very earliest stages, a failing heart may show some slight deviation from the normal. Periodic medical examinations of those individuals approaching middle age, and during middle age, will disclose these deviations, and, with correct therapy, many will enjoy more years of productivity and usefulness.

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THE EFFECT OF SALYRGAN (MERSALYL) ON THE ELECTROCARDIOGRAM.

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Salyrgan (mersalyl) is an organic mercurical diuretic containing 36 per cent of mercury in combination with sodium-salicyl-allyl-amido-acetate, and for years its diuretic action has been thought due to both a direct irritant effect on the kidney and also an extrarenal tissue effect, extracting water and sodium chloride from colloidal combinations (Keith and Whelan, 1926; Crawford and McIntosh, 1925; Bohn, 1923). Fodor in 1923 thought that it acted neither directly on the kidney nor on the tissues, but assumed a hypothetical center in the medulla regulating water and chloride metabolism on which the drug acted directly. Jackson in 1926 suggested a specific action, such as that of epinephrin or aconitine, basing his assumption on findings after injections of salyrgan in dogs. He found an immediate rise in blood pressure with a definite shrinking in kidney volume. As the dosages were increased definite changes in string galvonometer tracings were noted. Salant and Nagler, working upon the isolated frog heart in 1931, found that mercury in Ringer's solution in concentrations above 1:500,000 decreased the force as well as the frequency of contractions and the heart action often became irregular.

In an attempt to clarify somewhat the cardiovascular effect of salyrgan, we arranged for a heterogenous group of twenty convalescent patients with no evidence of cardiac disease to receive 2 c.c. of salyrgan intravenously, taking blood pressure and pulse readings with electrocardiograms before injection and repeating the readings at fifteen- and thirty-minute intervals following injection.

No serious untoward symptoms were noted in any patient. Three complained of a feeling of warmth following injections, two complained of pain in the arms injected. No evidence of hematuria or albuminuria could be found after injection.

CHART I

Before Salyrgan

	Disease	Age	B. P.	Auricular Rate P. R. Interval	Ventricular Rate Q. R. S. Interval	Abnormalities
1.	C. N. S. Syphilis	41	125/70	70, .16 sec.	70, .08 sec.	None
2.	Cardio-spasm	52	110/70	88, .16	88, .08	None
3.	Appendicitis post-operative	20	130/70	75, .16	75, .08	None
4.	Bronchiectasis	42	170/100	115, .14	115, .08	Deep S, Lead III
5.	C. N. S. Syphilis	43	120/70	94, .16	94, .08	None
6.	Lobar Pneumonia	27	100/70	88, .16	88, .08	Extrasystole, Notched Q. R. S., III
7.	Acute Pleurodynia	23	115/70	60, .20	60, .08	Bradycardia
8.	Upper Respiratory Infection	21	128/83	94, .12	94, .08	Notched Q. R. S., III
9.	Influenza	30	120/85	83, .14	83, .08	Deep S, III
10.	Acute Pleurodynia	28	115/60	71, .14	71, .06	Deep Q, Q. R. S. Slurred, III
11.	Combined Sclerosis	44	150/100	83, .14	83, .06	None
12.	G. C. Arthritis	22	129/90	105, .14	105, .08	None
13.	Subarachnoid Hemorrhage	33	120/80	75, .18	75, .08	None
14.	G. C. Arthritis	28	100/50	83, .16	83, .06	None
15.	Catarrhal Jaundice	39	110/68	65, .14	65, .06	None
16.	Pleurisy	38	98/60	71, .18	71, .06	Deep Q, III
17.	Duodenal Ulcer	33	110/70	83, .18	83, .06	Q. R. S. Slurred, III
18.	Bilateral Salpingitis, post-operative	21	135/95	107, .16	107, .06	None
19.	Bilaterial Salpingitis post-operative	26	115/80	136, .06	136, .06	Tachycardia, Low Q. R. S., I
20.	Varicose Veins	50	140/95	107, .16	107, .06	Low Q. R. S., III

CHART II

After Salyrgan

	15 MINUTES				30 MINUTES			
	B. P.	AURICULAR RATE, P. R. INTERVAL	VENTRICULAR RATE Q. R. S. INTERVAL	ABNORMALITIES	B. P.	AURICULAR RATE, P. R. INTERVAL	VENTRICULAR RATE Q. R. S. INTERVAL	ABNORMALITIES
1.	125/70....	71, .14	71, .08	None	125/70....	71, .14	71, .08	None
2.	120/80....	75, .16	75, .08	None	125/80....	75, .16	75, .08	None
3.	130/70....	75, .16	75, .08	None	130/70....	75, .16	75, .08	None
4.	170/90....	100, .14	100, .08	Deep S, III	150/90....	100, .14	100, .08	Deep S, III
5.	120/70....	94, .14	94, .08	None	120/70....	94, .14	94, .08	None
6.	100/70....	83, .16	83, .08	Ventricular, extra systole, notched Q. R. S., III	100/70....	83, .16	83, .08	Ventricular, extra systole, notched Q. R. S., III
7.	115/70....	50, .16	50, .06	Bradycardia	115/70....	56, .16	56, .06	Bradycardia
8.	125/80....	83, .12	83, .08	Notched Q. R. S., III	123/80....	88, .12	88, .08	Notched Q. R. S., III
9.	120/85....	75, .16	75, .08	Deep S, III	120/80....	83, .14	83, .08	Deep S, III
10.	115/60....	65, .14	65, .06	Deep Q, Slurred Q. R. S., III	115/60....	65, .14	65, .06	Deep Q, Slurred Q. R. S., III
11.	150/100....	83, .14	83, .06	None	150/100....	83, .14	83, .06	None
12.	129/90....	105, .14	105, .06	None	129/90....	105, .14	105, .06	None
13.	120/80....	79, .18	79, .08	None	120/80....	85, .18	85, .08	None
14.	100/50....	75, .16	75, .06	None	100/48....	75, .16	75, .06	None
15.	110/63....	65, .14	65, .06	None	110/64....	65, .16	65, .06	None
16.	100/60....	70, .14	70, .06	Deep Q, III	100/60....	70, .16	70, .06	Deep Q, III
17.	110/70....	83, .18	83, .06	Slurred Q. R. S., III	100/70....	83, .18	83, .06	Slurred Q. R. S., III
18.	135/97....	115, .12	115, .06	None	135/100....	107, .16	107, .06	None
19.	115/80....	110, .16	110, .06	Low Q. R. S., I	115/80....	107, .16	107, .06	Low Q. R. S., I
20.	135/88....	94, .16	94, .06	Low Q. R. S., III	125/85....	98, .16	98, .06	Low Q. R. S., III

The electrocardiographic changes noted in Chart I were not considered unusual or evidence of any cardiac pathology except Case 4, in which the patient was found to have a definite hypertension with evidence of left axis deviation in the tracing.

After salyrgan blood pressure readings were not altered. Twelve patients had lessened pulse rate, which was thought to be due to relaxation and loss of fear.

CONCLUSIONS

1. Salyrgan in therapeutic doses does not effect blood pressure or pulse.

2. Salyrgan in therapeutic doses has no effect on the electrocardiogram.

3. No toxic symptoms were elaborated in twenty patients after the intravenous administration of salyrgan.

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PREVENTIVE PEDIATRICS.*

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In giving this paper it is not the desire of the author to present anything particularly new or peculiar in the subject matter, but rather to develop a concept which perhaps is not common to all. The term preventive pediatrics is not a good one but is used for the want of a better one. It implies far more than the prevention of disease and is used rather as a mental view-point from which the subject of pediatrics is approached. The approach to pediatrics is through disease or medicine; in preventive pediatrics the approach to the subject is through the child. Only a few conditions are distinctly peculiar to childhood and these are related to development. The ordinary conception of pediatrics is that it is the practice of general medicine less the degenerative processes. In preventive pediatrics we are primarily interested in the child, in his normal growth and development and in the means of attaining normalcy. We are interested in the prevention of morbid or abnormal conditions through general means and by specific means. We are interested in his normal mental development and psychology. By a study of the child it has been learned that no small part of the deviations from normal health and development have their origin not in bio-chemical or biological causes, but in habits, mental reactions, and psychological conflicts. There is a demand on the part of the general public for a physician to care for their children who knows something more than the diagnosis and treatment of disease in childhood and who has the knowledge to guide the growth and development of the child. In the term preventive pediatrics, then, we look for knowledge which will enable a child to be well born, to come into the world strong and healthy, to thrive lustily and without halt during infancy, to develop and grow in a normal way during childhood, to be able physically and mentally to acquire a sound education, to acquire good habits of living and avoid bad ones, to avoid psychological abnormalities so that the child adjust himself to his social environment, to pass through the difficult period of puberty and adolescence into a sound maturity, to prevent ill health through maintenance of good health, to prevent by scientific measures so far as we are able the infectious diseases of childhood.

The subject matter divides itself naturally, into two main fields: One the material which has to do with the normal development of the child, the physical and mental growth, nutrition and diet, hygiene, psychology, etc. The second has to do with the specific methods of prevention of abnormal conditions and diseases peculiar to or of frequent occurrence in the period of infancy and childhood.

1. In the development of the first part of our subject it is necessary to say something about heredity. The physician should know something about the diseases and conditions which are clearly inherited and be of some influence in his teaching of parents as to the types of marriages to be avoided. Some of these are: Huntington's chorea, diabetes insipidus, syphilis, muscular atrophy, hemophilia and certain skeletal characteristics such as polydactylism, syndactylism, etc. Our influence in this field is perhaps more limited than in some of the others to be discussed.

Environment is most influential in bringing about the desired end-result in children. It is perhaps more important than heredity. Most of our difficult problems in pediatrics have their deep seated roots in environment, and very little can be done to solve these problems unless we approach them through the environment. Discussion with parents concerning home life and their methods are most helpful to child, parent and physician.

Child guidance is one of the very most important and fruit-bearing duties of the physician dealing with the child. The intelligent handling of temper tantrums, head banging, bed wetting, etc., is paramount. The most difficult thing for many parents is to acquire a sympathetic point of view.

*Read before the George M. Kober Medical Society, October 22, 1934.

This can only be done by meeting him on his own mental level. The best insurance of happiness and useful citizenship that any child can have is a happy home life with understanding parents.

Pre-natal care, while the duties of it fall to the obstetrician, must be taken up with the subject of preventive pediatrics. The treatment of syphilitic mothers can bring about normal children. The reduction of prematurity is a fertile field and needs more attention. Aside from these few conditions it is believed that an abundance of minerals, calcium and vitamins during pregnancy plus good general health of the mother has a very vital bearing on the fundamental structure and resistance of the newborn infant.

Early infant care from the moment of birth is just as important as the medical care of the mother, for it has been shown that half of the infants who die in the first year of life die during the first month. There is need for more and better knowledge of the processes of growth during the first few weeks of life and this is a fertile field for our bio-chemists and laboratory workers.

The nutrition and diet and prevention of malnutrition is most important in preventive pediatrics. It is here that our knowledge is most abundant, although much progress has been made in the past decade, no doubt even greater strides will be made in the next. The field of vitamin therapy has been over-worked, but there are still many hidden secrets. The vitamine deficiency diseases are seldom seen in a well ordered general or pediatric practice nowadays, but not more than a fortnight ago the writer saw a full-blown case of scurvy in consultation in one of our best residental sections. The baby did not like orange juice supposedly, so didn't get it or any other vitamin C in appreciable quantity, so at the age of one year was suffering from what good preventive pediatrics could have spared her. It is believed that the advent of vitamin D milk will greatly reduce the incidence of rickets. Not that this can be relied upon solely, for some infants require a great deal more vitamin D than others, so that cod liver oil still has a place and shall continue to have until more is known about all the factors which are active in producing rickets.

Breast feeding, all too frequently impossible in these days, is still of the utmost importance. Even if the baby can only have a few weeks on the breast and that only "part time," it is believed worthwhile. Delicate and premature babies are far more easily started on breast milk than on a formula, and we believe that they derive immune bodies as well which we can't put in a formula. Something must be said, however, about keeping the baby on the breast too long. Some of the most miserable specimens of malnutrition and unhappy babies are those who have nursed too long. Most textbooks teach us to wean at nine months—the writer believes that eight months or even younger might be better. Even though the baby gets an adequate supply of breast milk he should have, from an early age, orange juice and cod liver oil. The older idea that if the baby is breast fed it need not be taken to the pediatrician until a bottle is needed is not good preventive pediatrics and is to be condemned in the interest of the child. Cereals and vegetables are needed at an early age just as in the bottle-fed baby. In the past our textbooks have taken up too much space about computing artificial formulae and have not emphasized the proper importance of nursing at the breast at least for a time; and in the final analysis there is nothing so difficult about formula writing. If the baby gets between 1.5 and 2 oz. of milk per pound of expected body weight per day and enough carbohydrate added to give him 50 calories per pound, he will be satisfied and be able to grow and develop normally.

Many striking facts about nutrition and growth will be brought out in the future around the glands of internal secretion. Suffice it to say here that the prevention of simple goiter, myxedema, and the treatment of cretinism hold an important place in preventive pediatrics.

The prevention of specific diseases occupies a high place in our concept of preventive pediatrics. It is here that we can do a great deal and it is to be hoped that in the near future there will be still more diseases for which we can offer definite protection. Perhaps it would be well to run over these diseases and the ones for which we have hope in the future. Every child at the age of five or six months should be actively immunized against diphtheria. The alum precipitated toxoid seems to have a definite value over the older toxin-antitoxin or toxoid. One injection is made instead of two or three of the plain toxoid or toxin-antitoxin. The work is not completed until the Schick test has been done later and proven to be negative.

Every child should be vaccinated against small-

pox at an early age. Some time during the first or second year is far better than later at the school age for many reasons. In the first place he won't get smallpox, and in the second place the post-vaccinal complications are far less than frequent.

We should never see a case of typhoid fever, but in our children's Hospital as well as occasionally in private practice we do see cases every summer and fall. For this reason, it is believed that we are lax in the use of anti-typhoid vaccine. No harm can come of it, so why not vaccinate every child in our practice at the age of two years when he begins to get away and boiled milk, boiled water, etc., are not used.

The milk borne diseases are prevented by boiling the milk, and let no parent with a quasi-medical knowledge persuade you to use raw milk unless it be certified, and even then it should be boiled for young infants. The old summer diarrheas have been irradicated through boiling milk and our modern electric refrigeration. It is not to be forgotten, however, that some of our patients from the outlying districts don't have the advantage of electric refrigeration and the old ice box has to be relied upon. These mothers need special instruction about foods for the small infant and keeping of them from one day to the next in hot weather.

It is to be hoped that in the near future we shall have specific means of protection against whooping cough and poliomyelitis.

It is regretted that time and space do not permit a fuller discussion of many of the factors, a knowledge of which must be had, before one can practice good preventive pediatrics. A thorough knowledge of disease etiology, pathology and treatment must be developed, but we must go further. In a very sketchy manner, I have tried to point out the way to the proper concept of preventive pediatrics. The approach is through the child and not disease.

The pediatrician must be familiar with home surroundings and, for this reason, the Clinic and Child Hygiene centers, while they have their place, can't practice good preventive pediatrics for they can't go all the way. Private practice through intimate personal contact and acquaintance with the parents and children can reach the ideal. The Clinic or Child Hygiene center serves a useful purpose in stimulating an interest in children and their proper growth and development, but the practice of good preventive pediatrics can only be developed by the child's private physician. It can't be done where a different doctor sees the child at each visit, and who has no chance nor the time to familiarize himself with all conditions about which the child is surrounded. Early contact with the home should be made so the physician can judge the type and character of environment in which the child will have to grow up. Some enthusiastic child health workers have expressed the view that the conferences are of such tremendous importance and value that their services should be extended to all classes and be provided for all children at public expense, regardless of economic status. This is based upon a superficial knowledge and an incomplete understanding of preventive pediatrics. This means making general use of a poorer method when a better one is at hand.

The ideal of preventive pediatrics has been well expressed in the vernacular of the automobile, "The work of the pediatrician should be that of the service station rather than that of the repair shop." This can only be accomplished through frequent, thorough, and intelligent physical examinations (with records thereof kept on file), begun at birth, repeated several times in the first few months, followed by monthly examinations during the first year, bi-monthly in the second year, semi-annually until the sixth year, and the annual examinations through adolescence.

5430 Connecticut Avenue, Northwest.

THE END-RESULTS OF DENTAL FOCAL INFECTION FROM A MEDICAL VIEWPOINT.*

WM. H. HIGGINS, M. D.,
Richmond, Va.

Dental infection is older than the human race. In animals evidences of caries and pyorrhea alveolaris have been found in the fossilized remains of primitive vertebrates of the Paleozoic era. The first written notice of oral infection as a cause of systemic disease is said to occur in the writing of Hip-

*Presented as part of a symposium on Dental Focal Infection before the Richmond Dental Society, November 5, 1934.

pocrates and occasional references are found in the works of many ancient and medieval writers.

In an audience of this kind the orthodox approach to the subject and the line of least resistance would be to review the admirable work of Rosenow in showing the selective action of certain bacteria in focal infection and to report the clinical studies of Billings on the beneficial results of the removal of dental caries on systemic disease. However, medicine, like other sciences, is being put on the spot, so to speak, and many of our earlier impressions are being revamped in the light of advancing knowledge. Focal infection in its relation to systemic disease is undoubtedly one of the major bulwarks in our attack on the cure and prevention of many pathologic abnormalities. Experimentally gastric ulcer, nephritis, endocarditis and other diseases have been reproduced but only after enormous quantities of virulent cultures, corresponding to one-half pint in human beings, have been given intravenously to animals. Although these laboratory procedures prove the theory of focal infection, yet it leaves a great deal to other contributory factors when we consider the actual amount of potentially pathogenic organisms in a dental granuloma. That disappointing results frequently follow the removal of foci of infection has been the experience of all of us. Pemberton, in his study of 400 arthritic soldiers, writes: "184 patients or 46 per cent recovered in the presence of demonstrable surgical foci. This is nearly three times the number which improved after the removable of foci." Apperton, reviewing the records of drafted men during the World War, showed that recruits exhibiting dental disease did not show an undue incidence of arthritis, gastric ulcer, endocarditis or muscular rheumatism. Last year at the University of Pennsylvania, Arnett and Ennis made a detailed study of 883 students with special reference to dental infection and evidences of present or past disease. Their conclusion was: "While these data offer no support for the view that dental infection causes rheumatism, chorea, valvular heart disease or electrocardiographic abnormalities in these college students, yet if the body resistance should be lowered by exposure, hardship, or advancing years it is possible that such might be the case.

How then would we evaluate our end-results after dental therapy in the light of these findings? The fact that the majority of adults have areas of infection and only a small minority of us show demonstrable systemic effects indicates that there are certain basal considerations which operate in every case. The more one studies arthritis for example, the more one realizes that a combination of factors is at work to produce the disease. In addition to a search for focal infection, especially dental, no thoughtful student of medicine would under-estimate such contributory agents as heredity, age, fatigue, worry, or certain physiological disturbances either directly or indirectly referable to dental infection. It is clear, therefore, that in addition to the local effect of bacteria there must also be considered their influence through a less obvious and probably chemical mechanism. There is still to be considered the influence of these ill-defined toxins upon the physiologic processes of the body as a whole. It is, therefore, of importance to inquire as far as possible into those disturbances of the normal physiological activities which make infection possible and to end-results of such an invasion.

With this diagnostic approach to the subject of dental focal infection clearly before us, it is possible to consider the role of oral infection in general diseases.

The distant effects of dental infection are usually caused by the streptococcus group. The most thoroughly studied cases have been those of infectious arthritis. Cecil has succeeded in isolating from both the blood and joint fluid the same type of streptococcus as found in the apex of an infected tooth. Associated with infectious arthritis there is often involvement of the muscles, tendons, and bursae by the same organism. Next to joint diseases one naturally thinks of endocarditis of either the rheumatic or bacterial type. Although never definitely proven there is reason to believe that the pre-existence of peridental infection is a causative factor.

Another interesting group of metastatic infections are those of the iris and uveal tract. DeSchweinitz states that there is no better established etiological relationship than that between septic foci in dental areas and certain diseases of the eye, especially those of the uvea.

The relation of dental infection to mental disease has received extensive investigation, particularly at the hands of Cotton. He believes that a great many toxic psychoses are the result of dental infec-

tion and has brought about an appreciable improvement by proper dental hygiene.

To summarize, we may state in the light of our present knowledge the following conclusions:

1. Dental infection bears a very definite causal relationship to certain systemic diseases. Its potentialities, however, are dependent upon definite contributory factors which are necessary in the production of disease.

2. The beneficial results following dental therapy are in direct proportion to the ability of the physician to cope with the non-bacterial factors entering into the production of the disease.

3. Until the medical profession can obtain a clearer comprehension of the *modus operandi* of focal infection and the factors necessary in the production of systemic disease our therapeutic results will be disappointing.

712 Medical Arts Building.

Miscellaneous

REMINISCENTIAE DE CLASSE 1895-1935 COLEGII MEDICALII VIRGINIAE.*

By DR. H. U. STEPHENSON

To the old Egyptian building strayed I yesterday;
Methought, forsooth, familiar faces greet I would—
But scanned in vain, as on the portico I stood,
Each stranger as he hurried by upon his way.
Depressed was I, for visions of another day,
In crystal fancy, of the treasured past I could
Discern. Ah, pleasant contacts many; meet I should
Relive those scenes of forty years ago today!
Uprose "Doc" Taylor and Chris. Baker's ebon shade,
And tutors, students—classmates now departed—too.
E'en at the festive board tonight, in spirit, they,
On respite brief from Hadean realm—where long they've staid—
Have come once more, old pals, to live those scenes anew
With us, on this, our fortieth anniversary.

*Composed and read by Dr. Stephenson on the occasion of the reunion of the class of '95, Medical College of Virginia.

Abstracts

A Critique of Proposed "Ideal" Sterilization Legislation.

Abraham Myerson, M. D., of Boston, Mass., in a paper appearing in the March, 1935, issue of the *Archives of Neurology and Psychiatry,* states that this discussion does not concern itself with sterilization as a rational, well thought out measure, applicable to individual cases of feeble-mindedness and mental disease. Personal researches concerning the hereditary factor in mental diseases and mental defects have led to the logical conclusion that from the biologic standpoint there are persons who should be sterilized in order that their particular type of mental disease or defect shall not be transmitted to succeeding generations. Whatever may be the theological or legal attitudes toward such psychiatric situations, the psychiatrist, as one whose point of view is biologic, must agree that a limited program of sterilization is eugenically sound. Whether such a program would be practical, or whether it would override legal rights, which are to a certain extent as important as biologic rights, is not a matter for consideration in this study.

This article specifically attacks as extravagant and as approaching mania a proposed sterilization law set up as the ideal by certain important eugenists. Eugenics is, in his opinion, being made ridiculous as well as a threat to civilized life by the law under consideration. If one examines the writings of important workers in the field of biology, psychiatry and eugenics, one finds no justification whatever for the proposed program.

Dr. H. H. Laughlin in a monograph discussed at great length the litigation under the Virginia sterilization statute which led to the notable decision of the Supreme Court of the United States upholding the statute.

Dr. Laughlin gave the following definition: A socially inadequate person is one who by his or her own effort, regardless of etiology or prognosis, fails chronically, in comparison with normal persons, to maintain himself or herself as a useful member of the organized social life of the state.

Dr. Myerson calls attention to the fact that in some of the definitions there occurs the term "regardless of etiology or prognosis," which obviously is uncandid, since if a socially inadequate person is not such by heredity he becomes irrelevant to the legislation proposed. That is, if the social inadequacy is created through some environmental mishap, then certainly the case does not merit any consideration from the standpoint of sterilization.

Note the term "as a useful member of the organized social life of the state." Who shall say who is a useful person? In a capitalistic society a communist can scarcely be declared a useful mem-

ber of the social life of the state. In a Bolshevik society the capitalist falls at once into the class of the useless. In times of war the pacifist will be defined by all true patriots as worse than useless. In Hitler's Germany, the Jew at one fell swoop is declared as of no value to the state, regardless of the fact that as an Einstein, a Zondek or a Willstatter he may be a brilliant scientist contributing hugely to the welfare of the world. It would be easy to declare that Edgar Allan Poe was a useless member of society, and certainly Francois Villon, whose name has outlived that of the useful people of his time, was of no special value to the organized state. And so on, and so on.

He says, I now come to the crux of the matter—a definition of the socially inadequate classes, and quotes the Virginia law:

The socially inadequate classes, regardless of etiology or prognosis are the following: (1) feebleminded; (2) insane (including the psychopathic); (3) criminalistic (including the deliquent and wayward); (4) epileptic; (5) inebriate (including drug-habitues); (6) diseased (including the tuberculous, the syphilitic, the leprous, and others with chronic, infectious and legally segregable diseases); (7) blind; (8) deaf (including those with seriously impaired hearing); (9) deformed (including the crippled); and (10) dependent (including orphans, ne'er-do-wells, the homeless tramps and paupers).

Again he repeats that unless the defects in the groups specified are of hereditary origin their citation in a law of this kind is irrelevant or, if not irrelevant, conceals some purpose which must be challenged at the outset.

In a study which he carried out for the Commonwealth of Massachusetts, which was published in 1930, a survey of the persons confined to institutions was made. Even among these "worst" families there were normal branches producing worth while persons. And for any one of these families there were a dozen in which the feeble-minded member was a solitary defective occurring in an otherwise normal familial group not in any way to be distinguished from the rest of the population.

He quotes Popenoe as saying, in regard to California, apparently the greatest number of institutional feeble-minded are the children of the skilled laborers, not of the paupers or the casual laboring class. The same is true of the retarded school children of Munich.

The difficulty with studies such as those sponsored by the eugenists of Cold Spring Harbor is that a wide variety of conditions are lumped together as one; whole diversities of things are artificially united. Thus, if a father has a sick headache and his descendant has dementia praecox, the two conditions are linked together in a hereditary chain.

Regarding crime, in fact, crime is mainly a matter of social definition. An act which is criminal today may have been legitimate yesterday and may be legitimate again tomorrow, for example, the sale of liquor. If one includes in the "criminalistic" group the delinquent and wayward, and especially if one includes those guilty of sex delinquency, then one would have had to impose sterilization on some of the finest figures in the world's history—the greatest poets, the finest painters, the most brilliant writers, the leaders of nations—as well as on every second man and probably on every third woman in the community.

With epilepsy science is now attacking the problem on the very practical and direct bases of the make-up of the brain, the chemical composition of the blood and the interchange of gases and fluids which takes place in the body.

When to the aforementioned absurdities is added the inclusion of the blind, the deaf, the crippled (which category would include the President of the United States) and the dependent, orphans being clamped together with tramps, the whole thing becomes a mess of incomprehensible bias. Eugenics, like politics, makes strange bedfellows.

He quotes from the law: The term "cacogenic" person as herein used is purely a legal expression and shall be applied only to persons declared, under the legal procedure provided by this act, to be potential parents of socially inadequate offspring.

And what is a potential parent of socially inadequate offspring, alias a "cacogenic" person?

The state eugenist, who is to enforce this law by detecting such potential parents, will need to be not a scientist but a clairvoyant. Imagine the graft, the blackmail and the generally muddled and corrupt social reactions involved in this proposal! The enforcement of the prohibition law would have been a simple problem, free from corruption and graft, as compared with the determination as to who is a potential parent of socially inadequate classes. Either the proponents of this legislation are naive beyond simple powers of expression, or else—what?

He ends by saying; it becomes a duty, therefore, both from a scientific and from a social standpoint, for neurologists and psychiatrists to attack vigorously and destroy any such eugenic proposals as those here considered before they become translated into the reality of laws which will destroy freedom and individuality.

BEVERLEY R. TUCKER, M. D.

Public Health Statistics

I. C. RIGGIN, M. D.
State Health Commissioner of Virginia

The communicable disease reports received at the office of Dr. G. F. McGinnes, State Epidemiologist, during the month of May, 1935, show the following cases compared with the same month in 1934:

	1935	*1934*
Typhoid and Paratyphoid Fever	24	32
Diphtheria	55	46
Scarlet Fever	95	101
Measles	2,293	5,103
Meningitis	42	7
Poliomyelitis	4	0
Rocky Mountain Spotted Fever	5	5
Typhus Fever	0	2
Undulant Fever	2	3
Tularaemia	3	1
Smallpox	0	0

During the summer of 1935 "The Summer Round-Up," which is a physical examination of children who will enter school for the first time in the fall, will be conducted in many of the cities and counties of the State. This program is sponsored not only by the Medical Society of Virginia, The Virginia Congress of Parents and Teachers, and the State Departments of Education and Health, but also by the American Medical Association, The American Child Health Association, and other State and National organizations. Physical examination of all children before entering school for the first time is also one of the chief objectives of the National Congress of Parents and Teachers.

The value of Summer Round-Ups cannot be overemphasized. During these Round-Ups the preschool children are given thorough physical examinations by physicians, at which time the parents are notified of existing defects and urged to have all remediable defects corrected before the child enters school, thereby giving each child the best opportunity of entering school physically fit. Parents are also advised to have their children immunized against diphtheria and vaccinated against smallpox at this time if it has not been done before.

In the past, Summer Round-Ups in Virginia have shown that approximately 80 per cent of the children examined needed some correctional work.

According to the records of the State Department of Health, 4,848 children, or approximately 15 per cent of the white children entering school, were examined during the pre-school Round Ups in 1934. These examinations were reported to the State Department of Health by the following cities and counties:

Counties	*Examinations*
Albemarle	31
Alleghany	17
Amherst	93
Arlington	230
Augusta	679
Brunswick	87
Caroline	5
Charlotte	127
Chesterfield	86
Culpeper	12
Dinwiddie	9
Fairfax	50
Frederick	52
Giles	13
Grayson	62
Hanover	75
Henrico	478
Henry	52
James City	47
King and Queen	54
King William	44
Mecklenburg	12
Nottoway	57
Page	17
Powhatan	76
Prince Edward	150
Prince George	61
Princess Anne	54
Roanoke	115
Rockbridge	280
Russell	6
Shenandoah	53
Southampton	117
Spotsylvania	4
Stafford	83
Sussex	21
Tazewell	66
Warren	135
Wythe	116
York	22
Total for counties	3,748

Cities	*Examinations*
Alexandria	217
Lynchburg	331
Newport News	25
Norfolk	326
Petersburg	24
Portsmouth	177
Total for cities	1,100

Woman's Auxiliary to the Medical Society of Va.

President—MRS. JOSEPH BEAR, 3012 Monument Ave., Richmond.
President-Elect—MRS. FLETCHER J. WRIGHT, Petersburg.
Recording Secretary—MRS. JAMES B. STONE, 2042 Park Ave., Richmond.
Corresponding Secretary—MRS. AMBROSE MCGEE, 4107 Kensington Ave., Richmond.
Treasurer—MRS. REUBEN F. SIMMS, 2034 Park Ave., Richmond.

National Meeting.

The Convention of the Woman's Auxiliary to the American Medical Association and the Canadian Medical Association which was held in Atlantic City, N. J., June 10th-14th, was one of the finest in the history of both organizations, not alone because of the splendid tone of its program and excellent cooperation but also due to the fact that the hostesses had as their leader, Mrs. Robert W. Tomlinson, her able staff of officers, and the assistance of committees from New Jersey, Pennsylvania and Delaware Auxiliaries. It was a meeting that will linger long in our memories.

I had the privilege of attending the National Board dinner in honor of Mrs. Tomlinson, National President, which was held at Claridge Hotel, June 9th, 7 P. M. The Woman's Auxiliary to the Medical Society of Delaware was hostess. Guests from her native city, Wilmington, and officers of other organizations throughout the State of Delaware spoke of her active participation in varied clubs and societies also her achievements during the past year as President of our National Auxiliary. We from Virginia join them in vociferous praise of her accomplishments.

Monday, June 10th, 10 A. M., the Pre-Convention Board Meeting was held at Hotel Traymore. Many valuable recommendations were presented. At one o'clock a luncheon was held in Submarine Grill of same hotel which was followed by another Board Meeting at 2:30 P. M. The "Get Together Dinner" at Ritz-Carlton Hotel followed by a musical and reception in honor of Canadian visitors was an outstanding feature.

Tuesday, 8 A. M., the ever-popular Southern breakfast took place at Traymore Hotel. Guests of honor were Mrs. Robert W. Tomlinson and Mrs. Rogers N. Herbert, President-Elect. Mrs. J. Bonar White, President Woman's Auxiliary to Southern Medical Association, presided. Quite a large delegation from Virginia were present. At 9 o'clock the general meeting of Woman's Auxiliary was opened. Mrs. James Hunter, of New Jersey, greeted the delegates and guests and Mrs. Jordan, of Alabama, responded very graciously. On Wednesday, 9 A. M., the meeting was continued. The reports of various Auxiliaries throughout the country were read by State Presidents; they were well received and exhibited noteworthy work. A special vote of thanks and welcome was extended our newest acquisition, the Auxiliary to the New York Medical Society. A reception and Auxiliary luncheon in main dining room of Traymore Hotel followed with Dr. L. G. Rowntree, Director, Philadelphia Institute of Medical Research, as guest speaker. His talk was most informative. After greetings from many past and present officers, Dr. Morris Fishbein presented Dr. DeFoe, of "Quintuplet Fame." Our Canadian neighbor was received with acclaim and the intimate story of these marvelous children was instructive as well as interesting.

Thursday, 9 A. M., I attended a group discussion on "Program and Health Education," and at 10 A. M., the Post-Convention meeting, with Mrs. Rogers Herbert presiding. Her address was inspiring and the Board pledged their earnest support. The "Bring Your Husband Dinner" was held at Traymore Hotel at 7 P. M. and the President's reception and ball at 9 P. M. at the Ambassador Hotel with many thousand physicians, wives and daughters present.

The Credentials Committee reported that eight thousand two hundred physicians registered. A total Auxiliary registration was eighteen hundred and forty-nine which included one guest from England.

The exhibits were attractively displayed and here, too, we were represented with attractive posters and

a huge scrapbook. I take this opportunity to thank Mesdames H. M. Snead, Southgate Leigh, of Virginia, and Mrs. Henry R. Miner, of Nebraska, National Chairmen of Exhibits, for their interest and cooperation.

I gratefully acknowledge the genial cooperation of delegates and alternates during the Convention.

(MRS. JOSEPH) KATE C. BEAR, *President,*
Woman's Auxiliary to the Medical Society of Virginia.

James City, New Kent Medical Auxiliary.

The May meeting of this Auxiliary was held at the home of Mrs. B. I. Bell, of Williamsburg, with Mrs. A. M. Sneed, of Toano, the new president, presiding.

The Auxiliary unanimously voted to present the colored training school with *Hygeia*, the first issue to start in September, thus helping to swell the number during *Hygeia* drive. It was voted to send a shower of cards to Mrs. J. R. Parker, one of our members, who is quite sick.

Mrs. Sneed, accompanied by her daughter, entertained with two solos. Refreshments were served after which the meeting adjourned. The July meeting will be held at the home of Mrs. J. R. Tucker, of Williamsburg.

(MRS. L. V.) MABEL HENDERSON,
Reporter.

The Auxiliary of the Lynchburg Academy of Medicine

Has put on a campaign for membership, our goal being the enlistment of every physician's wife.

At the last meeting, a contribution of fifteen dollars was voted to the Madison Heights school to be used for feeding the undernourished children. Plans were made also for a bridge party to raise funds for our work. A telephone committee was appointed by the president to call members and remind them that unpaid dues should be sent in now.

(MRS. ERNEST G.) ADELE SCOTT,
Secretary-Treasurer.

Richmond Auxiliary.

The last meeting for the year of the Richmond Auxiliary was held June 19th at the home of Mrs. William T. Sanger.

Interesting reports were given of the National meeting at Atlantic City by members who attended the convention, and plans for the coming year were discussed with much enthusiasm being shown in the prospects of a successful future.

Truth About Medicine

Thirtieth Anniversary of the Council on Pharmacy and Chemistry. On February 11th, the Council on Pharmacy and Chemistry completed its thirtieth year of service to the medical profession. For nearly a third of a century it has made contributions of inestimable value to rational therapeutics. Of the personnel of the Council, which serve entirely without remuneration, four members have been active ever since its organization in 1905. A comparison of the conditions prevailing in the marketing of drugs in this country before 1905 and those obtaining today indicates the debt that American medicine owes to the Council on Pharmacy and Chemistry. The rules governing the acceptance or rejection of remedies adopted in the beginning have gradually been amplified and clarified to meet new conditions. Advertising claims employed by manufacturers of pharmaceuticals for products accepted by the Council have attained standards of accuracy and truthfulness unequaled in any other field of marketing. *The Journal A. M. A.* and many other medical publications in this country, including the journals of all the state associations with the exception of Illinois, accept advertising for Council-accepted or official drugs only. But the Council's work would have come to naught had it not been for the militant aid of *The Journal A. M. A.*, and the ever increasing support of the medical profession.

In addition to its other activities, the Council issues several books: New and Non-official Remedies (revised yearly), Useful Drugs, the Epitome of the U. S. Pharmacopeia and National Formulary, and (in cooperation with the Council on Medical Education and Hospitals), Hospital Practice for Interns. It continues its important tasks, ever increasing in number and volume, unselfishly and with intelligence and foresight. It merits unfailing support by the medical profession. (Jour. A. M. A., February 9, 1935, p. 478.)

Accepted Devices for Physical Therapy

The following apparatus have been accepted by the Council on Physical Therapy of the American Medical Association for inclusion in its list of accepted devices for physical therapy:

Victor Micro-Surgical Diathermy Unit.—This unit is intended for surgical use only. It is designed primarily for electric coagulation and electric desiccation, but can also be used by certain specialists for straight diathermy to some parts of the body, such as the head, sinuses, ears and eyes, whenever such treatment is indicated. The General Electric X-Ray Corporation, Chicago. (Jour. A. M. A., February 2, 1935, p. 397.)

Aloe Double Therapy Lamp.—This unit is called a double therapy carbon arc ultraviolet lamp, because it is possible to make use of the various kinds of carbon, for example, the A Sunshine Carbon, the C therapeutic carbons and the K carbons. It combines in one unit a

carbon arc and a ring type infra-red generator. The mechanism of the unit is so arranged that either the carbon arc or the infra-red burner may be used independently of the other or the two units may be used simultaneously. A. S. Aloe Company, St. Louis, Mo. (Jour. A. M. A., February 16, 1935, p. 562.)

In addition to the articles previously enumerated, the following have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association:

Merck & Co., Inc.
Ephedrine Alkaloid (Hemihydrate).
Ephedrine Hydrochloride.
Ephedrine Sulphate.

The National Drug Co.
Ampul Solution of Dextrose, 10 Gm., 20 c.c.
Ampul Solution of Dextrose, 25 Gm., 50 c.c.
Ampul-Vial Solution of Dextrose, 25 Gm., 50 c.c.
Ampul-Vial Solution of Dextrose, 50 Gm. 100 c.c.

E. R. Squibb & Sons.
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Book Announcements

Useful Drugs: A List of Drugs Selected to Supply the Demand for a Less Extensive Materia Medica With a Brief Discussion of Their Actions, Uses and Dosage. Edited by ROBERT A. HATCHER, Ph. M., Sc. D., M. D., and CARY EGGLESTON, M. D. Prepared under the Direction and Supervision of the Council on Pharmacy and Chemistry of the American Medical Association. Ninth Edition. Cloth. Price, 60 cents. 203 pages. Chicago. American Medical Association. 1934.

The reviewer of this most excellent text can hardly describe this book in a way better than that given in a review of it in the *Journal of the American Medical Association,* Vol. 104, Page 859, 1935, as follows:

"This book represents a valuable and increasingly effective phase of the efforts of the Council on Pharmacy and Chemistry on behalf of rational therapeutics. Since its first appearance in 1913 it has become a recognized work in its field. It has been adopted as a textbook by teachers of therapeutics in the best medical schools and by various examining and licensing boards. The various editions and revisions since that time have been undertaken in the effort to keep it abreast with the advance of therapeutics. Drugs that have become obsolete have been deleted, and others the value of which has become established have been added. The statements of actions, uses and dosage of the various drugs are revised after discussion by the whole Council. They represent the latest and best results of therapeutics and pharmacologic revision. The present edition is in line with the constant aim of the Council, which has been to present a selective and informative yet comprehensive compendium of the more useful preparations in the medical armamentarium. There have been some additions to the list of drugs and a few have been deleted. Individual descriptions show evidence of careful editing.

"Typographically the text is an improvement on previous editions by reason of more generous spacing, which makes it easier on the eyes. As it stands, the book is an authoritative, intelligent, critical and entirely adequate textbook for the use of teachers and examiners, as well as for reference by the busy practitioner. It is an integral and constructive part of the Council's efforts in the promotion of the rational use of drugs."

H. B. HAAG.

Stammering and Allied Disorders. By C. S. BLUEMEL, M. A., M. D., F. A. C. P., M. R. C. S. (Eng.) New York. The Macmillan Company. 1935. 182 pages. Cloth. $2.00.

For more than two thousand years the problems of those handicapped by speech defects have been the subject of discussion by men of science. Hippocrates, Aristotle, Plutarch, Galen and Cicero of ancient times, and more recently Chervin, Liebman, Froeschel, Dejerine Munsterberg, Cannon, Janet, Head, Elliott-Smith, Charcot, Kraeplin, and others have written about stammering and allied disorders. However, until the past two decades, practically the only persons engaged in speech therapy have been quacks and incompetents quite lacking in the necessary scientific and pedagogical training. This may be due largely to the fact that the subject has seemed to lie outside the usual provinces of medicine and pedagogy.

The author of "Stammering and Allied Disorders" presents in this book a simple treatise on the etiology of stammering. His theory differs very little from others which are based on present knowledge of the conditioned reflex. He contrasts and reconciles it with those theories most widely used today as a basis for therapy.

Neurological theories of stammering invoke conflict as the basis of speech disorders. In this respect they run parallel to a number of psychological theories. This is not a coincidence beecause it actually appears that conflict lies at the seat of the difficulty. As viewed by the author, however, the conflict is one that occurs between the conditioned reflex of speech and inhibition. When there is no inhibition, speech proceeds fluently and uninterruptedly. When there is complete inhibition, speech ceases entirely and mutism ensues. It is only when there is partial inhibition that stammering results.

The book ends with a chapter on treatment which has some helpful suggestions but is by no means as complete as one might wish. Among the most useful suggestions is an outline of what to do when stammering first begins.

There are more than half a million stammerers in the United States who present a practical problem and a challenge to everyone interested in the correction of personality and behavior disorders. The field of prevention calls to us even more strongly, because most cases of stammering need not begin at all, or, if begun, may be much more easily arrested or cured in the early stages than after the defect has become more definitely a part of the individual's personality.

HARVIE DEJ. COGHILL, M. D.

Doctors and Juries. The Essentials of Medical Jurisprudence. By HUMPHREYS SPRINGSTON, of the Detroit Bar, Philadelphia. P. Blakiston's Son & Co., Inc., 1935. Octavo of 155 pages. Flexible fabricoid. Price, $2.00 net.

The author of this little book in his preface states that it is "for doctors who desire to know something of the legal aspects of their profession and for lawyers and others who wish information concerning the relationships of the law with the practice of medicine."

While the book is written in language that is remarkable for its lack of technical terms, particularly when dealing with two fields so filled with technical terms, it falls far short of the goal which the author has fixed for himself in the preface. While the book is divided into many chapters, it, in fact, could really be divided into two parts as it deals principally with the Law of Malpractice and with Insanity.

The author's treatment of the Law of Malpractice is very good, though there are certain errors which invariably creep into any general statements of a rule of law. It is of unquestioned value to the doctor who desires to take all precautions which he can against the institution of any suits against him for malpractice. Its value to the lawyer, however, in the trial of such an action would be but slight.

Chapter XV dealing with privileged communications contains the statement that "The law forbids disclosing any information acquired by a physician while attending a patient in a professional capacity and which was necessary to enable him to act in that capacity." While this may be the rule in Michigan where the author lives, it is not a correct statement of the common law in the absence of any statutory provision making such communications privileged. In Virginia, for instance, a physician may be summoned by either party of a litigation and compelled on the witness stand to disclose the results of his examination of a patient, assuming that the evidence is otherwise proper. Of course, a physician cannot be required to disclose any information which he may have acquired concerning a patient while attending him in a professional capacity, other than on the witness stand.

The second part of the book dealing with insanity is the opposite of the first part in that it is of real value to the lawyer, while I doubt that it is of material value to the doctor. It gives the lawyer a clearer picture of the kinds of insanity recognized by physicians.

While the above remarks are not particularly complimentary to this work, I do feel, however, that both doctors and lawyers would profit by a reading of the book. Some day we may yet have a book which will reach the high goal the author set out for himself in his preface.

EPPA HUNTON, IV.

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Editorial

Dessert Before Soup.

We are accustomed to hear teachers of medicine deploring the many shortcomings of medical education. Now they complain that medical students are not being taught the philosophy of medicine. We assume that by that phrase they mean certain general conceptions of medicine systematically arrived at with particular stress upon their practical application.

Education is not a new concern of the human race. In one form or another we have been subjected to the educational process since the dawn of civilization, but each generation thinks that it does things better than the preceding one. Latterly we have been busy trying to make education attractive and easy. We have fallen for short cuts and quick results and, speaking enthusiastically of practical learning, have turned up our noses at theoretical knowledge. In the first grade a child learns to read before he is taught his letters, in music he learns to play before he practices his five finger exercises.

In medicine the same effort at quick and attractive results is fomenting trouble. Curriculum builders are constantly paring down the old hard preclinical courses, regarded as irreducible ten years ago. Today, for instance, the student of anatomy takes hardly more than a Cooke's Tour through that once most difficult and exacting of medical courses. It seems to be the ambition of modern teachers to have a stethoscope dangling from the ears of their students before they know the use of the dissecting scalpel. Little regard is paid to medical knowledge that is not immediately practical. The former tedious years in the basal sciences, months of hard work in anatomy, physiology, chemistry, pharmacology and pathology are considered worth nothing if they keep the student back from early contact with the patient. The ambition of the modern medical school does not appear to be confined to bringing the student and the sick man into intimate contact from the day the would-be doctor first crosses the threshold of the medical school, but it envisions also a strange sleight of hand, a bit of pedagogical leger-de-main by which four years of a crowded medical curriculum will not only turn out students who have learned something of the structure of the body and how the machine runs, something of the breakdown of this complicated apparatus and what may be done to put it together again, but will inculcate in them a something called the philosophy of medicine. They hope to implant this state of mind in the applicant for a medical degree before he has experienced the chastening effect of trial and error, before he has undergone the mellowing influence of experience, before he has gained that perspective which until now has been held to be entirely a coefficient of time

and experience. They go merrily on, turning things upside down, putting third year men in hospital wards, turning fourth year men out of hospital wards into the so-called richer experience of the outpatient department, and in divers other ways trying to serve the dessert before the soup.

Where There is no Vision, the People Perish.

The American Medical Association has finally got round to appointing a committee to determine what position the Association should take concerning the question of birth control. Whether this action on the part of the Association has any bearing upon the attitude the Medical Society of Virginia should take is a matter for its officers to decide. It must be apparent from a recent poll taken by the MONTHLY and the activity of several birth control clinics in the State that the medical profession of Virginia is overwhelmingly in favor of the principle of birth control. Whether or not organized medicine in the State recognizes its obligation to furnish leadership for the movement, the fact remains that doctors as individuals are already actively engaged in the practical application of this important, and in many cases necessary, procedure.

Another Indication for Sympathectomy.

Surgery is the least static branch of medicine. Formerly our confreres of the scalpel were limited in their endeavors to the extremities and the surface of the body, but the frequency of war and other hazards of life made even this no doubt profitable. With advancing civilization and the peaceable fruits of righteousness this sort of surgery was due to all but pass away, and it would have, had not the automobile and the new hazards of modern industry made traumatic surgery once more good business. When the discovery of anesthesia and aseptic technic opened up the body cavities to surgical invasion, the cutting art seemed to come into its own. But the surgeon's very prowess was his undoing, and abdominal surgery as we once knew it may be said to be in full retreat. Not that the abdomen is not invaded every day on one mission or another, but many surgical procedures of yesterday are no longer countenanced by those who exercise any control over the activities of this branch of medicine. Good surgeons have ceased to tack up ptotic organs. They now heed the voice of conscience in the matter of oophorectomy, are less keen to excise the chronic appendix, are less meddlesome with gastric anatomy and physiology, and show less confidence in the extirpation of every suspicious gall-bladder. But surgery may be said to be in bold advance on other fronts, notably in the thorax and in the brain. For the moment the possibilities of surgery of the sympathetic nervous system has captured the imagination. In some instances the procedure has seemed well worth trying. In others it has been but a shot in the dark. Sympathectomy has been employed for a number of different conditions, for example, in epilepsy, exophthalmic goitre, glaucoma, Hirschsprung's disease, Raynaud's disease, paralysis agitans, arthritis, and angina pectoris. Recently there have been several reports of the successful treatment of retinitis pigmentosa by cervical sympathectomy. Other reports have been less enthusiastic. There are signs that ophthalmologists generally are encouraging the victims of this disease to submit to the surgical experiment. Sympathectomy in good hands does not appear to be a hazardous operation, and in dealing with a disease of such gloomy prognostic outlook, any procedure that offers the least hope should probably be recommended.

Myasthenia Gravis.

There are some diseases—due to their dramatic manifestations and newspaper publicity—which the patient and his friends diagnose rightly or wrongly more frequently than the doctor. Myasthenia gravis appears to be such a disease. The physician recognizes this as a rare affection of the musculature of the body, apparently induced by some antecedent acute infection, manifested clinically by ptosis of the eyelids, double vision, weakness of phonation, difficulty in deglutition, progressing to general muscular incapacity, but with a noticeable tendency to improvement with rest. Many persons, especially health-conscious, newspaper-reading persons, have come to picture every case of easy fatigability or unaccountable weakness as heralding the onset of this dread disease. Perhaps it is a yielding to the pressure of the popular imagination rather than their pioneer spirit that has led physicians to prescribe the amino acid, glycocoll, not only in true myasthenia gravis but in a great variety of other complaints whose resemblance to the real disease is only in the outstanding complaints of weakness and fatigability.

Myasthenia gravis should of course be recognized early by the physician and all of the measures known

to be effective, strychnine, extract of the cortex of the adrenal, ephredrine, and glycocoll, should be employed. But all cases of muscle flabbiness and undue fatigue are not myasthenia gravis and it is questionable whether for them glycocoll, which bears directly upon the chemical disarrangements of that disease, creatin-creatinine output and muscle metabolism, is of the slightest value.

Hospital Insurance.

We understand that movements are on foot looking to the establishment of hospital insurance in several Virginia cities. Probably the most complete realization of the plan at the present time is about to be effected in Richmond where Grace Hospital already advertises its readiness to accept patients on this basis. Perhaps an even more significant insurance movement in Richmond is that of the Retreat for the Sick, the Johnston-Willis, the Memorial, St. Elizabeth's and Stuart Circle Hospitals, which jointly plan to offer hospital insurance. The contract under which they propose to operate offers to the insured hospital care, routine nursing, operating or delivery room procedures including anesthesia, routine floor medicines and dressings. A maximum of twenty-one days is allowed in the hospital, covering not more than five separate admissions. This service is offered "in consideration of an enrollment fee of one dollar and of an additional sum of eighty-five cents per month payable in advance annually, semi-annually, quarterly, or monthly as may be determined for the employed group to which the subscriber belongs." The important feature of this plan is that it offers the insured not only the free choice of hospital but also the free choice of physician, a point often emphasized in the discussion of all types of medical insurance by the American Medical Association.

The North Carolina Epidemic.

Acute anterior poliomyelitis is said to be prevalent in North Carolina. At this writing more than a hundred cases have been reported in the state. The situation is alarming because it is unusual for epidemics of this disease to make as much headway as this so early in the season. Very few cases have been reported in Virginia to date, although several have appeared close to the North Carolina line. Physicians will want to be on the lookout for the manifestations of the disease in its preparalytic phase—fever, headache, stiffness of the neck, tremors, vomiting, apathy and retention of urine—and they will be thinking how they can most expeditiously secure convalescent serum, the most effective therapeutic procedure thus far discovered.

Department of Clinical and Medical Education of the Medical Society of Virginia

Pediatric Clinic in Southwest Virginia.

The Postgraduate Clinic in Pediatrics, with Dr. S. L. Ravenel, Greensboro, N. C., as instructor, held its first meeting at Christiansburg, June 19th, in the New Altamont Hospital. The following doctors were present:

Dr. Clyde F. Bedsaul, Floyd.
Dr. S. J. Beeken, Cambria.
Dr. R. M. DeHart, Christiansburg.
Dr. J. J. Giesen, Radford.
Dr. Wm. K. Lloyd, Christiansburg.
Dr. C. F. Manges, Blacksburg.
Dr. G. W. Morse.
Dr. S. H. Nixon, Christiansburg.
Dr. J. B. Porterfield, Christiansburg.
Dr. A. M. Showalter, Christiansburg.

Mr. Saunders, a student at the Vanderbilt School of Medicine, and Mr. C. R. Woolwine, a student at the Medical College of Virginia, were present as visitors. Meetings will continue Wednesday evenings and Thursday afternoons for five weeks.

Preparations are underway for other clinics in July in Norfolk, Portsmouth and Eastern Shore areas.

The Postgraduate Clinic at the Medical College of Virginia,

Conducted by the College in cooperation with the Department of Clinical and Medical Education of the Medical Society of Virginia, was held again this year in connection with the Stuart McGuire

Lectures. In addition to the attendance of members of the staff, a number of physicians who did not register, and senior medical students, there were registered for the Clinic fifty-one men from Virginia and adjoining states. The interest in the Clinic was good.

The following is the list of names of physicians who registered for the Clinic:

Dr. J. E. Raby, Tarboro, N. C.
Dr. J. F. Thaxton, Tye River, Va.
Dr. John Hundley, Lynchburg, Va.
Dr. J. O. Mathews, Clinton, N. C.
Dr. B. L. Quarles, Newport News, Va.
Dr. J. A. Rucker, Bedford, Va.
Dr. F. D. Wilson, Norfolk, Va.
Dr. Marshall Payne, Staunton, Va.
Dr. Harvie Baker, Norfolk, Va.
Dr. C. F. Manges, Blacksburg, Va.
Dr. W. C. Yeatts, Danville, Va.
Dr. S. E. Gunn, Hopewell, Va.
Dr. A. E. Turman, Richmond, Va.
Dr. D. M. Kipps, Front Royal, Va.
Dr. W. C. Caudill, Pearisburg, Va.
Dr. C. H. Iden, Berryville, Va.
Dr. G. C. Amory, Hilton Village, Va.
Dr. Grant Elliott, Orange, Va.
Dr. L. C. Haynes, Mt. Jackson, Va.
Dr. H. B. Dameron, Laurel, Md.
Dr. N. G. Wilson, Norfolk, Va.
Dr. H. W. Pritchett, Danville, Va.
Dr. P. W. Miles, Danville, Va.
Dr. J. J. Neal, Danville, Va.
Dr. R. H. Jones, Montgomery, W. Va.
Dr. O. F. Mitchell, Franklin, Va.
Dr. J. W. Wilkins, Mt. Owen, N. C.
Dr. J. H. Cutchin, Whitakers, N. C.
Dr. B. A. Hopkins, Stuart, Va.
Dr. F. T. Cassiday, Fredericksburg, Va.
Dr. N. B. Jeter, Covington, Va.
Dr. A. B. Sloan, Mooresville, N. C.
Dr. C. L. Neale, Fort Sam Houston, Tex.
Dr. R. H. Pretlow, Suffolk, Va.
Dr. W. J. Ozlin, South Hill, Va.
Dr. G. B. Robertson, Jackson, N. C.
Dr. B. W. Wilkinson, Clarksburg, W. Va.
Dr. J. W. Smith, Hayes Store, Va.
Dr. C. O. Dearmont, White Post, Va.
Dr. D. W. Ruffin, Ahoskie, N. C.
Dr. J. B. Ruffin, Ahoskie, N. C.
Dr. H. C. Odom, Ahoskie, N. C.
Dr. C. B. Bowyer, Stonega, Va.
Dr. Thos. F. Gill, Richmond, Va.
Dr. R. L. Raiford, Franklin, Va.
Dr. John W. Martin, Roanoke Rapids, N. C.
Dr. Ruth S. Mason-Grigg, Petersburg, Va.
Dr. J. M. Habel, Jetersville, Va.
Dr. F. P. Fletcher, Richmond, Va.
Dr. G. S. Fultz, Butterworth, Va.
Dr. Ennion Williams, Richmond, Va.

Proceedings of Societies

The Norfolk County Medical Society,

At its annual meeting on June 3rd, installed Dr. James W. Hunter as president and elected Dr. Walter B. Martin as president-elect, and Dr. Claiborne Willcox as vice-president. Dr. Lockburn B. Scott was re-elected secretary-treasurer for his sixteenth consecutive term. All officers are of Norfolk. At this time, delegates and alternates to the State Society meeting in October were also named.

The Wise County Medical Society,

At its annual meeting, elected Dr. T. J. Tudor, of Norton, as president. Dr. G. T. Foust, also of Norton, was elected secretary to succeed Dr. Culbertson who resigned at the first of the year due to his various other duties.

Joint Meeting.

The Warwick County Medical Society and the Peninsula Dental Society held their annual get-together as a dinner meeting at the James River Country Club on May 14th. The president of the Warwick County Medical Society, Dr. George G. Hankins, of Newport News, presided and introduced the speaker of the evening, Dr. Fletcher D. Woodward, of the University of Virginia. Dr. Woodward gave an interesting paper, demonstrated by lantern slides, entitled "The Management of Recent Fractures of the Nose and Sinuses."

The Clinch Valley Medical Society

Held its regular meeting at the Lonesome Pine Country Club (near Norton, Va.), on May 24th, thirty-eight members being present. Luncheon was served to all members and invited guests, following which there was a live discussion on State Medicine, Social Medicine, and Compulsory Sick Insurance led by Dr. Frank Smith, President, Medical Society of Virginia; Dr. Alex. F. Robertson, Jr., Chair-

man, Medical Economics Committee of the State Society, and Dr. I. C. Riggin, State Health Commissioner. As a result of this meeting, a committee was appointed to draw up resolutions and present same to the House of Delegates at the next meeting of the Medical Society of Virginia. Norton was selected as the place for the September meeting.

Dr. W. R. Williams, of Richlands, is president of this Society and Dr. C. B. Bowyer, of Stonega, is secretary.

The James City-New Kent County Medical Society,

At its meeting in June elected delegate and alternate to the Norfolk meeting of the Medical Society of Virginia, and decided to have the annual picnic on the York River on the first of August. As is its custom, in October there will be a night meeting to which the doctors will bring their wives, thus making this a social meeting.

Dr. B. I. Bell, Williamsburg, is president and Dr. L. V. Henderson, also of Williamsburg, secretary of the Society.

News Notes

Commencement Exercises of Virginia's Medical Schools.

MEDICAL COLLEGE OF VIRGINIA

The ninety-seventh Commencement exercises of the College opened with Student Night and a dance at the John Marshall Hotel, on Saturday, May 25th. The baccalaureate sermon on Sunday was by Rev. J. Blanton Belk, D. D., at Grace Covenant Presbyterian Church. Alumni day followed on Monday the 27th with the usual golf tournament in the afternoon and the annual dinner in the evening. At this time, Dr. Karl S. Blackwell, Richmond, was elected president for the coming year, succeeding Dr. Clifton M. Miller, also of Richmond, Dr. Paul F. Whitaker, Kinston, N. C., was elected first vice-president and Dr. F. H. Beadles, Richmond, was re-elected treasurer. On Tuesday there was a buffet luncheon for the Board of Visitors, Faculty, Alumni and Senior Classes at Cabaniss Hall, and the final exercises were held that evening at 8:00 P. M. at the Mosque Theater. At this time Honorable George C. Peery, Governor of Virginia, delivered the address, and displomas were awarded seventy-six graduates in medicine, fifteen in dentistry, seven in pharmacy, and thirty-one in nursing. Following the recessional, the annual reception and dance were held at the John Marshall Hotel.

The names of the graduates in medicine with hospital appointments are as follows:

MEMORIAL HOSPITAL, RICHMOND—Drs. Solomon Disick, Brooklyn, N. Y.; Joseph Moore Dixon, Roanoke; Lester Edwin Dunman, Mullens, W. Va.; Ralph M. Lechausse, Madison, Wis.; Soon Tai Ryang, Songdo, Korea; Hack Urquhart Stephenson, Jr., Richmond; Thomas Duval Watts, Clifford; Washington Carlyle Winn, Keysville, and Alfred Robert Stork, Charleston, W. Va.

STUART CIRCLE HOSPITAL, RICHMOND—Drs. Benjamin Randolph Allen, Richmond; George Steel Bowers, Richmond, and James Quincy Gant, Jr., Columbus, Ohio.

SHELTERING ARMS HOSPITAL, RICHMOND—Dr. John Robert Bender, Hubert, N. C.

JOHNSTON-WILLIS HOSPITAL, RICHMOND—Drs. Hunter B. Frischkorn, Jr., Richmond; Wellford Claiborne Reed, Richmond, and Eugene Bowie Shepherd, Richmond.

ST. LUKE'S HOSPITAL, RICHMOND—Drs. James Martin Habel, Jr., Jetersville, and Clarry Clyde Trice, Louisa.

SAINT ELIZABETH'S HOSPITAL, RICHMOND—Dr. John D. Hamner, Richmond.

GRACE HOSPITAL, RICHMOND—Dr. Edmund Moseley LaPrade, Richmond.

THE TUCKER SANATORIUM, RICHMOND—Dr. John Richard Saunders, Saluda.

SAINT VINCENT'S HOSPITAL, NORFOLK—Dr. John Emanuel Alexander, Norfolk.

NORFOLK PROTESTANT HOSPITAL, NORFOLK—Drs. William Holmes Chapman, Jr., Smithfield; Wayland Nash McKenzie, Norwood, N. C., and William Roberts Tyson, Norfolk.

BLUE RIDGE SANATORIUM, CHARLOTTESVILLE—Dr. Hugh Stephenson Edwards, Petersburg.

MARTHA JEFFERSON HOSPITAL, CHARLOTTESVILLE —Dr. Mason Cole Rowe, Montgomery, Ala.

CHESAPEAKE AND OHIO HOSPITAL, CLIFTON FORGE —Drs. Hermon Keith Herrin, Evergreen, N. C., and Cameron Farquhar McRae, Richmond.

GEORGE BEN JOHNSTON MEMORIAL HOSPITAL, ABINGDON—Drs. Herman Henry Hines, Bristol, and Sam Milchin, Richmond.

SHENANDOAH HOSPITAL, ROANOKE—Dr. Rupert Wendell Powell, Morgantown, W. Va.

LEWIS-GALE HOSPITAL, ROANOKE—Drs. William Thomas Pyles, Roanoke, and Jennings Bryan Spinks, Charleston, W. Va.

LYNCHBURG HOSPITAL, LYNCHBURG—Dr. Angelo Joseph Villani, New Haven, Conn.

STAATS HOSPITAL, CHARLESTON, W. VA.—Dr. Herbert Mather Beddow, Charleston, W. Va.

CHARLESTON GENERAL HOSPITAL, CHARLESTON, W. VA.—Dr. Charles Eugene Watkins, Charleston, W. Va.

CHESAPEAKE AND OHIO HOSPITAL, HUNTINGTON, W. VA.—Dr. Carroll Edward Lee Easterday, Union Bridge, Md.

UNITED STATES MARINE HOSPITAL, NEW ORLEANS, LA.—Drs. Chai Chang Choi, Songdo, Korea, and James Carl Trivett, Georges Fork.

BARONESS ERLANGER HOSPITAL, CHATTANOOGA, TENN.—Drs. Leon A. Dickerson, Scarbro, W. Va., and Max Leonard Holland, Logan, W. Va.

WATTS HOSPITAL, DURHAM, N. C.—Drs. Jesse Burns Earle, Stovall, N. C., and Woodrow W. Tyson, Mebane, N. C.

HIGHSMITH HOSPITAL, FAYETTEVILLE, N. C.—Drs. Samuel Leon Elfmon, Richmond, and Samuel Levine, Swan Lake, N. Y.

REX HOSPITAL, RALEIGH, N. C.—Dr. Holland Thomas Myers, Lexington, N. C.

JAMES WALKER MEMORIAL HOSPITAL, WILMINGTON, N. C.—Dr. Bennette Edward Stephenson, Jr., Weldon, N. C.

CITY MEMORIAL HOSPITAL, WINSTON-SALEM, N. C. —Dr. Ayer Crouch Whitley, Stony Point.

HOLY NAME HOSPITAL, TEANECK, N. J.—Dr. Charles Neil Eckerson, Charleston, W. Va.

SAINT BARNABAS HOSPITAL, NEWARK, N. J.—Dr. George Adrian Glass, Carteret, N. J.

ENGLEWOOD HOSPITAL, ENGLEWOOD, N. J.—Dr. Cornelius Edward Hagan, Jr., Lynbrook, Long Island, N. Y.

CHRIST HOSPITAL, JERSEY CITY, N. J.—Dr. Edison Earl Ritter, Salem, W. Va.

SAINT JOSEPH HOSPITAL, PATERSON, N. J.—Dr. Seymour Schotz, Paterson, N. J.

THE WOMAN'S HOSPITAL, CLEVELAND, OHIO—Dr. Alice Winifred Elliot, Youngstown, Ohio.

UNIVERSITY HOSPITALS, PITTSBURG MEDICAL CENTER, PITTSBURG, PA.—Dr. Edwin Patterson Ewers, Pittsburg, Pa.

SAINT JOSEPH HOSPITAL, READING, PA.—Dr. LeRoy Clark Fergus, Wilmington, N. C.

THE HOSPITAL OF THE WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, PHILADELPHIA, PA.—Dr. H. Aurelia Gill, Richmond.

SAINT VINCENT'S HOSPITAL, ERIE, PA.—Dr. Rector Sells Legarde, Damascus.

THE WOMAN'S HOSPITAL OF PHILADELPHIA, PHILADELPHIA, PA.—Dr. Esta Joyce Levy, Suffolk.

SAINT MARY'S HOSPITAL, SAN FRANCISCO, CALIF. —Dr. John William Linfesty, Long Beach, Calif.

STATE OF WISCONSIN GENERAL HOSPITAL, MADISON, WIS.—Drs. John Phillip Lynch, Jr., St. Petersburg, Fla., and Reno Russell Porter, Richmond.

HARPER HOSPITAL, DETROIT, MICH.—Dr. Louis Moosey, Monongah, W. Va.

NORTHERN PACIFIC BENEFICIAL ASSOCIATION HOSPITAL, TACOMA, WASH.—Dr. Frederico Hernandez Morales, Vega Alta, Puerto Rico.

BETH EL HOSPITAL, COLORADO SPRINGS, COLO.— Dr. David Pollack, Columbus, Ohio.

SAINT LUKE'S HOSPITAL, CEDAR RAPIDS, IOWA— Dr. Solomon Abraham Rabinowitz, Brooklyn, N. Y.

SAINT FRANCIS HOSPITAL, HARTFORD, CONN.— Dr. Leo Louis Tylec, Meriden, Conn.

THE MERIDEN HOSPITAL, MERIDEN, CONN.—Dr. Harold Wayne Ward, Clay, W. Va.

UNITED STATES PUBLIC HEALTH SERVICE—Dr. William Haney Matthews, Dante.

Other graduates are:

Dr. Charles Atlas Bland, Richmond.

Dr. James Dudley Brown, Summerville, W. Va.

Dr. David Patton Burleson, Jr., Spruce Pine, N. C.

Dr. Louis Lovenstein, Richmond.

Dr. James Talton O'Neal, Amelia.

Dr. John Joseph Sperandeo, Brooklyn, N. Y.

UNIVERSITY OF VIRGINIA

The Department of Medicine held its commencement exercises in conjunction with those of the other departments of the University and this was a gala occasion as usual. The class dance was held on the evening of June the 7th and alumni reunions which began on Friday continued through Saturday, with a barbecue luncheon, baseball game, class and departmental banquets, and an informal dance in the evening. Reverend E. McNeill Poteat, Jr., D. D., of Raleigh, N. C., gave the baccalaureate sermon on Sunday and that evening there was an organ recital in the McIntire amphitheatre.

Monday was again a busy day for the alumni, this being the time at which the class of '35 was welcomed to the organization. In the afternoon President and Mrs. Newcomb held a reception at their home for the faculty, alumni, classes of '35, and visitors. Following the Phi Beta Kappa address that evening, there was the usual alumni ball. Class exercises were held on Tuesday morning and the final exercises at which degrees were awarded were at 5:30 that afternoon. Dr. David R. Lyman, Wallingford, Conn., of the medical class of '99, gave the commencement address, after which three hundred and ninety graduates were awarded degrees, fifty-four of these being in the Department of Medicine.

Names of the medical graduates with hospital appointments are:

UNIVERSITY OF VIRGINIA HOSPITAL, UNIVERSITY—Drs. William Eugene Apperson, Madison Heights; Albert Emanuel Long, Bridgewater; Charlton Gilmore Holland, Jr., Danville; John Osborne McNeel, Mill Point, W. Va.; Jesse James Porter, Louisa; William Lyons Taliaferro, Hampton; Martin Robert Wisely, Waynesboro, and William Swope Wray, Northfork, W. Va.

JEFFERSON HOSPITAL, ROANOKE—Drs. Sheldon David Carey, Culpeper, and William Randolph Watkins, Halifax.

ROANOKE CITY HOSPITAL, ROANOKE—Dr. Brooke Baylor Mallory, Lexington.

SAINT VINCENT'S HOSPITAL, NORFOLK—Dr. Beverly Long Holladay, Suffolk.

CHESAPEAKE AND OHIO HOSPITAL, CLIFTON FORGE—Dr. John Walton Ross, Jr., Clarksville.

RETREAT FOR THE SICK, RICHMOND—Dr. Hyman Rock Sheintock, Petersburg.

CHURCH HOME AND INFIRMARY, BALTIMORE, MD.—Dr. John William Ashworth, Jr., Coeburn.

JOHNS HOPKINS HOSPITAL, BALTIMORE, MD.—Dr. William Bennett Bean, Universtiy.

BALTIMORE CITY HOSPITAL, BALTIMORE, MD.—Drs. Alexander Gustavus Brown, III, Richmond, and Harwood Hugo Ritter, Charlottesville.

UNION MEMORIAL HOSPITAL, BALTIMORE, MD.—Drs. William Walker Butzner, Jr., Fredericksburg, and William Province McGuire, Winchester.

SINAI HOSPITAL, BALTIMORE, MD.—Dr. Alter Laibstain, Berkley.

VIRGINIA MASON CLINIC, SEATTLE, WASH.—Drs. Charles Lewis Bittinger, Gerrardstown, W. Va.; Howard Harman Curd, Welch, W. Va., and Paul Burns Haggland, Seattle, Wash.

ROPER HOSPITAL, CHARLESTON, S. C.—Dr. Richard Boxley Bowles, Clifton Forge.

TENNESSEE COAL AND IRON HOSPITAL, FAIRFIELD, ALA.—Dr. George Minor Caldwell, Radford.

MERCY HOSPITAL, CEDAR RAPIDS, IOWA.—Dr. Hugh Tucker Chelf, Jr., Culpeper.

SAINT LUKE'S HOSPITAL, ST. LOUIS, MO.—Dr. William Malvern Clopton, Chevy Chase, Md.

EMORY UNIVERSITY HOSPITAL, EMORY UNIVERSITY, GA.—Dr. George Cooper, Jr., Louisville, Ky.

NEW YORK CITY HOSPITAL, WELFARE ISLAND, N. Y.—Dr. Kenneth Cooper, Lynchburg.

NEW YORK HOSPITAL, NEW YORK, N. Y.—Dr. Byrd Stuart Leavell, Culpeper.

GOUVERNEUR HOSPITAL, NEW YORK, N. Y.—Dr. John Fulton McGavock, Universtiy.

BETH ISRAEL HOSPITAL, NEW YORK, N. Y.—Dr. Arthur Weinberg, Far Rockaway, N. Y.

JEWISH MEMORIAL HOSPITAL, NEW YORK, N. Y.—Dr. Herman Wolff, Lynchburg.

KINGS COUNTY HOSPITAL, BROOKLYN, N. Y.—Dr. Carl Louis Wilson, Boston, Mass.

MILLARD FILLMORE HOSPITAL, BUFFALO, N. Y.—Dr. Charles Lawrence Stinson, Buffalo, N. Y.

ORANGE MEMORIAL HOSPITAL, ORANGE, N. J.—Dr. Richard Anthony Cupaiuoli, Woodcliff, N. J.

MEDICAL CENTER, JERSEY CITY, N. J.—Dr. Alfred Leon Kruger, Norfolk.

WOMAN'S HOSPITAL OF PHILADELPHIA, PHILADELPHIA, PA.—Dr. Margaret DeRonde, Teaneck, N. J.

UNITED STATES PUBLIC HEALTH SERVICE, WASHINGTON, D. C.—Drs. Romeo Joseph Gentile, Suffolk; Robert Stocton McVaugh, Hockessin,

Del.; Roy Randolph Powell, White Plains; James Benjamin Shuler, Shenandoah, and Roland Harris Vaughan, Cardwell.

GARFIELD MEMORIAL HOSPITAL, WASHINGTON, D. C.—Dr. Edward Lee Hopewell, Strasburg.

SIBLEY HOSPITAL, WASHINGTON, D. C.—Dr. Harold Maurice Jackson, Leesburg.

DUVAL COUNTY HOSPITAL, JACKSONVILLE, FLA.—Dr. Floyd Kinzer Hurt, Marion.

LOUISVILLE CITY HOSPITAL, LOUISVILLE, KY.—Dr. Edward Valentine Jones, Jr., Newport News.

CINCINNATTI GENERAL HOSPITAL, CINCINNATTI, OHIO—Dr. Claude Marshall Lee, Jr., Charlottesville.

PARKLAND CITY HOSPITAL, DALLAS TEXAS.—Dr. Boyd Hawthorne Payne, Clifford.

WATTS HOSPITAL, DURHAM, N. C.—Dr. James Bannister Stone Perrow, Hurt.

NEWTON HOSPITAL, NEWTON LOWER FALLS, MASS.—Dr. Lewis Alexander Vance, Waynesboro.

CHARLESTON GENERAL HOSPITAL, CHARLESTON, W. VA.—Dr. George Clegg Williams, Coeburn.

INSTRUCTOR, DEPARTMENT OF PATHOLOGY, UNIVERSITY OF VIRGINIA—Dr. Frank William Foote, Jr., Hattiesburg, Miss.

Guest Speakers at Norfolk Meeting.

Dr. F. H. Smith, president of the Medical Society of Virginia, has invited Dr. Arthur C. Christie, of Washington, D. C., and Dr. James E. Paullin, of Atlanta, Ga., to be the guest speakers at the Norfolk meeting of the Society in October. Dr. Christie will speak before the general meeting on Tuesday evening, the 15th, and Dr. Paullin will give his address on Wednesday evening.

Those desiring to present papers and exhibits should advise this office, by August 20th, in accordance with the cards sent members the middle of June.

The Monticello Hotel is to be headquarters and it is suggested that reservations be made promptly, though there will be ample hotel accommodations in the local hotels for all who may be able to attend.

In making vacation plans, reserve a few days for the State meeting. The social contacts of these meetings adds much to the scientific interest of these occasions.

American Medical Association.

The eighty-sixth annual session of the Association was held at Atlantic City, N. J., June 10th-14th, with Dr. Walter L. Bierring, Des Moines, Iowa, as president. At this time, Dr. James S. McLester, of Birmingham, Ala., succeeded to the presidency. There was an attendance of close to 9,000, the registrations through Thursday having been 8,294. More than 175 doctors from Virginia attended, many of these being accompanied by their wives.

Virgina was represented in the House of Delegates by Dr. J. C. Flippin, University; Dr. Hugh H. Trout, Roanoke, and Dr. Wright Clarkson, Petersburg.

The Canadian Medical Association held its sessions in conjunction with those of the American Medical Association, and this added greatly to the interest of the meeting. In the Scientific Exhibits, Drs. Dudley C. Smith, W. A. Brumfield, Jr., and E. E. Barksdale, of the University of Virginia Medical School, received a certificate of merit in the Class II exhibits, for excellence of presentation of their exhibit illustrating practical epidemiology of syphilis.

The House of Delegates voted to hold the 1936 session in Kansas City, Mo., and named Dr. T. Tate Mason, Seattle, Wash., president-elect; Dr. Kenneth M. Lynch, Charleston, S. C., vice-president; Dr. Olin West, Chicago, secretary; Dr. Nathan B. Van Etten, New York, speaker of the House of Delegates, and Dr. H. H. Shoulders, Nashville, Tenn., vice-speaker of the House.

It is of interest to note that Dr. Mason, the president-elect of the A. M. A., is a native of Orange County, Va., and was graduated from the University of Virginia, Department of Medicine, in 1905. He first located in Philadelphia and later moved to Washington State where he is prominently identified with the social as well as the professional life of that section.

Did You Get Your Questionnaire?

A Questionnaire which should be of interest to every member of the Medical Society of Virginia has just been sent our full membership. The answer of each individual member is needed to make this poll of value. From the opinions expressed, the Medical Economics Committee wishes to prepare a report for presentation to the House of Delegates of the Society at our Norfolk meeting. The outcome of our action at that time may mean much to every doctor in Virginia.

Please fill out and return your Questionnaire *at once*. If you failed to receive your copy, one may be procured upon request sent the Society's office in Richmond.

Dr. and Mrs. W. Ambrose McGee,

Of Richmond, Va., left the first of June for Los Angeles, Calif., where Dr. McGee expects to take a course of several months in allergy as related to pediatrics under Dr. George Piness. During his absence, his practice is being cared for by Dr. Benj. E. Hodge, formerly a resident physician at Johns Hopkins Hospital, but more recently connected with the Rockefeller Institute for Medical Research in New York City.

Dr. Grey C. Hughes,

Class of '34, Medical College of Virginia, is at the Children's Hospital, Boston, Mass., where he is now beginning his second year of a two-year service in children's surgery.

Dr. Roshier W. Miller,

Professor of materia medica and therapeutics at the Medical College of Virginia, Richmond, has been elected to honorary membership in Rho Chi, the national pharmaceutical society. This is an honor in recognition of distinguished service rendered by Dr. Miller, who has been connected with the former University College of Medicine and the Medical College of Virginia for forty years.

Group Hospitalization Plan Approved for Richmond.

The city-wide group hospitalization plan which has been under consideration for some time was unanimously approved by the Richmond Academy of Medicine at its meeting on June 11th, and will be put into effect promptly. The plan is designed to provide a low cost hospitalization plan for groups of employed persons, and has already been approved by the directors of Johnston-Willis, St. Elizabeth's, Stuart Circle, Retreat for the Sick, Memorial and St. Philip Hospitals. The Attorney General of the State has formally ruled that the Medical College of Virginia hospitals may enter into this contract. The State Corporation Commission has also stated that if the plan now being worked out proves satisfactory, authority will be granted to proceed with this plan under the Securities Law. Commercialism is entirely eliminated and every effort will be made under the sponsorship of the Academy to put the plan upon the level of a true community service.

For the time being, this service will be limited to groups of ten persons who will constitute not less than 40 per cent of the employed force to which they belong, though smaller groups may be accepted by special agreement. These groups may include males and females, white or Negro, 60 years of age or under, within the restrictions prescribed. Enrollment fee will be $1.00, to be paid but once, and 85 cents a month. payable in advance.

Dr. Charles C. Canada,

A member of the class of '31, University of Virginia, Medical School, has recently located in the Professional Building, Staunton. Va., where he is specializing in pediatrics. Since graduation he has served a rotating internship in the Charity Hospital of Louisiana, New Orleans, on the Medical Service at the University of Virginia Hospital, and also on the Medical Service of the Infants and Children's Hospital in Boston.

Dr. Henry W. Decker,

Of Richmond, Va., was elected vice-president of the local chapter of the University of Richmond alumni at a luncheon meeting held May 31st.

Dr. Lewis C. Pusch,

For several years associate professor in the Department of Pathology, Medical College of Virginia, has located at York, Pa., where he has become pathologist to the York Hospital.

The Tulane Centennial Anniversary

Was celebrated in a gala four-day fete, June 8th-12th, at New Orleans, with prominent alumni and guests addressing the student body and visitors. It is interesting, historically, to note that the Medical College of Louisiana, which was the nucleus of the present university and the Tulane School of Medicine, was founded late in 1834 through the efforts of Dr. Thomas Hunt, of South Carolina, Dr. Warren Stone, of Vermont, and Dr. John M. Harrison, of Washington, D. C., who came South to fight an epidemic of cholera and yellow fever which was raging in New Orleans at that time. The Medical College of Louisiana was incorporated as the Medical Department of the University of Louisiana twelve years later, from which its name was later changed to the Tulane School of Medicine.

Medical College of Virginia News.

Dr. W. Lowndes Peple made the presentation ad-

dress on the occasion of the unveiling of the portrait of Dr. G. Paul LaRoque, which was the gift of Omega Upsilon Phi and Phi Beta Pi fraternities to the Medical College of Virginia. The exercises were held in the auditorium of the Richmond Academy of Medicine on Tuesday, May 28th. President W. T. Sanger, of the college, spoke briefly in receiving the portrait for the institution. Miss Marcia Silvette, of Richmond, was the artist. The portrait will be hung in the college library.

Among those attending the American Medical Association annual convention in Atlantic City were: Dr. Lewis E. Jarrett, superintendent of the Hospital division; Dr. Harvey B. Haag, professor of pharmacology; Dr. William B. Porter, professor of medicine; Dr. Fred J. Wampler, professor of preventive medicine and head of the outpatient department; Dr. Frederick B. Mandeville, professor of radiology, and Dr. H. Hudnall Ware, Jr., associate professor of obstetrics.

The outpatient department report for the month of May shows 5,873 patient visits made by 2,908 individual patients.

Dr. Frederick W. Shaw, professor of bacteriology and parasitology, attended the American Society of Clinical Pathologists in Atlantic City, June 7th-10th.

Dr. Lewis E. Jarrett, secretary of the alumni association, attended the annual meeting of the Virginia Pharmaceutical Association at Virginia Beach, June 17th.

The graduates of the College in medicine, dentistry, pharmacy and nursing, this year, represented sixteen states, two foreign countries, and thirty-three of the one hundred counties of Virginia.

News from University of Virginia, Department of Medicine.

On May 14th Dr. John H. Neff spoke before the Rockingham County Medical Association in Harrisonburg on the subject of Tumors of the Kidney. He also attended the meeting of the American Association of Genito-Urinary Surgeons at White Sulphur Springs from June 6th-8th, and read a paper on Congenital Canals and Cysts of the Genito-Perineal Raphe.

Dr. Grant Fleming, professor of public health and preventive medicine at McGill University, visited the Medical School on May 23rd.

Dr. J. R. McCord, professor of obstetrics and gynecology at Emory Medical School, visited here on May 26th.

On June 8th the Medical Graduates of the Class of 1925 presented to the University a portrait of the late Dr. John Staige Davis, professor of medicine from 1901 to 1927. The portrait is the work of Mr. Raymond Neilson, of New York, and was unveiled by Dr. Davis' grandson, John Staige Davis, IV. The exercises took place in the Medical School's library where the portrait will hang.

The American Gynecological Society

Held its annual meeting at Hot Springs, Va., May 27th-29th, under the presidency of Dr. Brooke M. Anspach, of Philadelphia. At this time, Dr. Benjamin P. Watson, New York City, was elected president for the coming year; Dr. William C. Danforth, Evanston, Ill., treasurer, and Dr. Otto H. Schwarz, St. Louis, Mo., was re-elected secretary. The place and date of next meeting will be named later.

Dr. J. Edwin Wood, Jr.,

Associate professor of internal medicine in the Department of Medicine, at the University of Virginia, was one of the guest speakers at the meeting of the Pacific Northwest Medical Association held in Spokane, Wash., June 27th-29th. He was invited to give three lectures, as follows: Recent Advances in the Study of Rheumatic Fever; Diuretics in the Treatment of Cardiac Edema; and Pregnancy and Hypertension.

Dr. John H. Thomas, Jr.,

Who has been interning at the Baltimore City Hospital, Baltimore, Md., since his graduation from the University of Virginia last year, is locating the first of this month at Greenville, Va., where he will be engaged in general practice.

Dr. Ross V. Patterson,

Dean and Sutherland M. Prevost Professor of Therapeutics at Jefferson Medical College, Philadelphia, was the recipient of the honorary degree of doctor of laws at the commencement exercises of Ursinus College, Collegeville, Pa., in June.

Dr. and Mrs. Jamie P. Scott,

Richmond, Va., have gone to Bedford, Va., where Dr. Scott will be engaged in general practice. He has been interning at Sheltering Arms Hospital, Richmond, since graduation from the Medical College of Virginia, in 1934.

Dr. Arthur S. Mann,

Class of '34, Medical College of Virginia, who has been interning at St. Vincent's Hospital, Norfolk, Va., has secured an internship at Memorial Hospital, Richmond, Va., for the coming year.

Dr. Irwin M. Nuckols,

Also an alumnus of the Medical College of Virginia, class of '34, who interned at St. Vincent's Hospital, Norfolk, located at Mount Sidney, Va., the first of June, where he is engaged in general practice.

Re-elected to City School Board.

Dr. Roshier W. Miller and Dr. Clifton M. Miller have been re-elected by the City Council as members of the Richmond, Va., City School Board, their new terms of office to begin July 1st.

Dr. M. D. Foster,

Who was recently located at Elkton, Va., has moved to Stanley, Va., for general practice.

Motion Pictures for Medical Groups.

Mead Johnson & Company, Evansville, Ind., has four groups of films (16 mm.) which may be borrowed without charge for showing by physicians to medical societies, medical students, hospital groups, etc. These groups deal with surgical, obstetrical, pediatric and laboratory subjects, and are offered as another Mead Service to the medical profession. Information in regard to these motion pictures may be secured from Mead Johnson & Company.

Dr. V. E. Lascara,

Of the class of '34, Medical College of Virginia, who served an internship at George Ben Johnston Memorial Hospital, Abingdon, Va., the past year, is on July the 1st entering upon a general internship at St. Francis Hospital, Wilmington, Del.

Dr. H. U. Stephenson Honored.

Early in June, upon the occasion of the fortieth anniversary of his graduation in medicine from the Medical College of Virginia, Dr. H. U. Stephenson, medical examiner of the State Industrial Commission, was the recipient of a very lovely tribute from the officials and employees of the Commission, in appreciation of his service among them. At an informal gathering in his office, they presented him with the four volumes of "R. E. Lee," by Dr. Douglas S. Freeman, the first volume of which was most fittingly inscribed and signed by all the officials and employees in his department.

West Virginia State Medical Association.

The annual meeting of the Association was held in Wheeling, early in May, under the presidency of Dr. R. H. Walker, of Charleston, with the largest attendance in his history. There was a registration of 441 or almost 40 per cent of its membership. Dr. Charles G. Morgan, Moundsville, was elected president; Drs. Ivan Fawcett, Wheeling, and Ward Wylie, Mullens, vice-presidents; and Dr. T. M. Barber, Charleston, was re-elected treasurer. Mr. Joe W. Savage, Charleston, is the executive secretary. The next annual session will be held at Fairmont.

Dr. William Tate Graham,

Richmond, Va., was given the honorary degree of doctor of science at the commencement exercises of Hampden-Sydney College in June.

Dr. John L. Jennings,

Who received an appointment as intern at the Wisconsin General Hospital, Madison, Wis., upon graduation from the Medical College of Virginia in 1934, will continue at that hospital, having been made orthopedic resident for the coming year.

Dr. E. V. Valz,

An alumnus of the University of Virginia and a member of the Medical Society of Virginia since 1906, has been transferred from the *U. S. S. Nevada* to the U. S. Marine Recruiting Station, Philadelphia, Pa.

Col. William L. Keller Honored.

President Roosevelt recently signed an act of Congress to give Col. Keller full active pay for the rest of his life, regardless of retirement, in appreciation of his valuable services. Col. Keller, of the Medical Corps of the Army, has been chief of the surgical service at Walter Reed General Hospital, Washington, for sixteen years, commanding officer of the hospital for several years, and director of surgery in the Army Medical School. He is an alumnus of the Medical College of Virginia, class of '99.

Dr. S. B. Nickels,

Recently of Big Stone Gap, Va., is now taking postgraduate work in internal medicine at the Medical College of Virginia hospitals in Richmond.

Orthopedic Day,

For a consideration of orthopedic problems, was sponsored by the Dixie Hospital of Hampton, Va., on May 30th, at which time, Dr. Thomas Wheeldon, of Richmond, and his associates presented an operative clinic in the morning and a dry clinic in the afternoon. Between sessions, luncheon was served at the hospital to twenty-six guests from the lower peninsula.

Dr. O. C. Brunk

Has been appointed police surgeon of Richmond, Va., to fill the vacancy caused by the death of Dr. Blanton L. Hillsman.

Doctors Interested in Baseball.

Dr. J. M. Emmett, Clifton Forge, Va., and Dr. I. T. Hornbarger, Hot Springs, Va., were recently elected president and secretary-treasurer, respectively, of the newly organized Alleghany Mountain Baseball League at Covington, Va.

Dr. Tiffany J. Williams,

Professor of obstetrics and gynecology at the University of Virginia, addressed the Obstetrical Section of the Norfolk County Medical Society on May 27th.

Dr. W. B. McIlwaine,

Pediatrician of Petersburg, Va., was the principal speaker on a broadcast sponsored by the American Legion post of Petersburg in observance of Mother's Day, his subject being "What Constitutes Adequate Maternity Care." Dr. McIlwaine stressed the need of prenatal care by competent doctors and nurses to make motherhood safe for mothers.

Dr. James K. Hall,

Richmond, Va., was awarded an honorary degree by the University of North Carolina, at its commencement exercises early in June.

Dr. M. T. Vaden,

Buena Vista, Va., was elected president of the Buena Vista Lions Club, at its organization meeting in May.

Virginia Alumni in Florida.

Dr. and Mrs. Joseph Lucinian, of Miami, Fla., recently entertained with a dinner party at the Royal Palm Club, that city, a number of the alumni of the University of Virginia and their wives, all residing in Miami. They were: Dr. and Mrs. Duncan Owens ('17), Dr. and Mrs. S. E. Chambers ('23), Dr. Don C. Eskew ('24), Dr. and Mrs. Herman Boughton ('25), Dr. and Mrs. T. O. Otto ('25), and Dr. and Mrs. J. Randolph Perdue (both of '32). Dr. Lucinian is of class of '24.

The Medical Society of the State of North Carolina

Held its annual meeting in Pinehurst in May, with Dr. Paul P. McCain, of Sanatorium, as president. At this meeting, Dr. Paul H. Ringer, Asheville, succeeded to the presidency and Dr. Charles F. Strosnider, Goldsboro, was named president-elect. The 1936 session will be held at Pinehurst also.

The American Proctologic Society,

At its annual meeting in Atlantic City, June 10th, elected Dr. Frank G. Runyeon, of Reading, Pa., president to succeed Dr. Louis A. Buie, of Rochester, Minn., Dr. Curtice Rosser, of Dallas, Texas, is secretary-treasurer.

Dr. Mildred Forman,

Class of '34, Medical College of Virginia, who has been interning at the Montgomery Hospital, Norristown, Pa., will go to Baltimore on July 1st to work in the clinics at Johns Hopkins under Dr. Emil Novak. While there, she also expects to have some experience in cystoscopy.

Dr. F. A. Snidow,

Who has been doing special work in obstetrics and gynecology at the University of Iowa, has recently returned to University, Va.

Married.

Dr. W. W. Wilkinson, La Crosse, Va., and Mrs. William E. Price, Lawrenceville, Va., June 11th.

Dr. James Porter Baker, Jr., and Miss Louise Herbert Rogerson, both of Richmond, Va., June 8th.

Dr. Joseph William Houck, University, Va., and Miss Katherine Kemp, Lynchburg, Va., June 1st.

Dr. Wellford Claiborne Reed and Miss Elizabeth Minor Lewis, both of Richmond, Va., May 29th. Dr. Reed is a member of the class of '35, Medical College of Virginia, and will intern at Johnston-Willis Hospital the coming year.

Dr. George Steel Bowers, Richmond, Va., and Miss Martha Clare Mathes, on June 5th. Dr.

Bowers is also a member of the class of '35, Medical College of Virginia, and received an appointment to intern at Stuart Circle Hospital, Richmond.

Dr. Prentice Kinser, Jr., and Miss Gladys Whitten, North Garden, Va., the latter part of May. Dr. Kinser has been interning at the University of Virginia Hospital.

Dr. Philip David Stout and Miss Julia Holston Slack, both of Bristol, Va.-Tenn., April 17th.

Dr. Benjamin Franklin Cozart and Miss Helen Rebekah Newell, both of Reidsville, N. C., May 18th. Dr. Cozart is a member of the class of '29, Medical College of Virginia.

Dr. Richard B. Easley, Huntington, W. Va., and Miss Mary F. Kellam, April 30th.

Jefferson Medical College News.

The 110th Annual Commencement was held on June 7, 1935. The valedictory address was delivered by Dr. Homer P. Rainey, President, Bucknell University, his subject being "The Relations of General and Medical Education."

The graduating class numbered 142 bringing the total number of graduates to 16,042. The graduates originated in twenty different states.

The graduating class of 1935 presented a portrait of the late Dr. Thomas Cook Stellwagen, Professor of Genito-Urinary Surgery, 1930-1935, to the College on April 4, 1935.

The following promotions and appointments in the teaching corps have been made during the past session: Warren B. Davis, M. D., Clinical Professor of Oral Surgery; Edward F. Corson, M. D., Associate Professor of Dermatology; Benjamin P. Weiss, M. D., Associate Professor of Neurology; Clifford B. Lull, M. D., Harry Stuckert, M. D., and Thaddeus L. Montgomery, M. D., Assistant Professors of Obstetrics; John T. Farrell, Jr., M. D., Assistant Professor of Roentgenology, and Roentgenologist to the Department of Anatomy; Henry B. Decker, M. D., Assistant Professor of Dermatology; Garfield G. Duncan, M. D., and A. Cantarow, M. D., Associates in Medicine; C. Fred Becker, M. D., Associate in Nervous and Mental Diseases; J. Bernard Bernstine, M. D., and James F. Carroll, M. D., Associates in Obstetrics; Baldwin L. Keyes, M. D., Associate in Psycho-Pediatrics.

A Venereal Disease Clinic

Has just been opened in Norfolk, Va., in accordance with a resolution adopted by the Norfolk County Medical Society about a year ago. This is a private clinic in charge of Drs. N. F. Rodman, Raymond Kimbrough and S. Bryan Pope. Routine Wassermanns are made on all cases and no charge is made for this service since the Health Department makes the tests. However, a charge of one dollar is made for neosalvarsan injections. This clinic is being operated for the purpose of giving satisfactory treatment for syphilis to those in the low income group, there being great need for this service since the closing of the syphilis clinic at St. Vincent's Hospital.

For Rent—

Office suite in Medical Arts Building, Richmond, Va. Phone 2-8140 or write No. 488, care the VIRGINIA MEDICAL MONTHLY, 1200 East Clay Street, Richmond, Va. (*Adv.*)

Obituary Record

Dr. Garland E. Faulkner,

South Boston, Va., died at his home in that place on May 30th following an illness of several months. He was forty-seven years old and, upon completion of his academic education, studied medicine at the University of Virginia from which he graduated in 1910. During the World War he served as a surgeon in the United States Navy after which he retired to South Boston and resumed private practice. He was one of the re-organizers of the Halcyon Hospital in South Boston after the death of Dr. Belt. He had been a member of the Medical Society of Virginia for some years. He is survived by his mother, a sister, and a brother.

Dr. James T. Leftwich,

A practicing physician at Highland Springs, Va., for the past twenty years, died suddenly at his residence on June 6th. Dr. Leftwich was prominent in medical and fraternal organizations, being a Mason, President of the Henrico County Board of Health, and a member of the Medical Society of Virginia and other organizations. He was an alumnus of the Medical College of Virginia, hav-

ing graduated from that institution in 1915. His wife survives him.

Dr. Henry Dewey Ribble,

Blacksburg, Va., died suddenly at his home on March 1st, death being due to cerebral hemorrhage. Dr. Ribble, who was a member of the Medical Society of Virginia, was eighty-two years of age.

Dr. James Hunt Royster.

The following memorial was read before a meeting of the Richmond Academy of Medicine on June 11, 1935:

Early on the morning of March 22nd, as he was preparing to leave his home to enter upon the day's work, Death in the guise of some cardiac catastrophe snuffed out the life of Dr. James Hunt Royster as suddenly as the flame is detached from the candle. He was, and he was not. Born at Townsville, North Carolina, on June 26, 1892, he had not yet reached the fullest manhood when the summons came.

His father was a physician before him, and early in life Dr. Royster had decided upon medicine as his own calling. In order to fit himself for the profession, he obtained a sound academic training. At the University of North Carolina, he was graduated with the degree both of Bachelor of Arts and Master of Arts in the class of 1913. His first two years in medicine were spent at the Medical College of Virginia, after which he entered Jefferson Medical College, from which he was graduated in 1917. Immediately he volunteered for service in the Medical Corps of the United States Navy, and as a Lieutenant he remained in the service of his country until 1921.

There was a naive reticence about those war years, and only his intimates who talked in low voices when lights were out and only the light of glowing coals coaxed men to talk, knew of his many dangers on convoy service in the North Sea and the Mediterranean. He was as beloved in the Navy as he was among all the other groups who knew him.

Soon after retirement from the Navy he became a member of the medical staff of Westbrook Sanatorium, where he gave himself so freely and so generously for the remainder of his days.

Dr. Royster was a dynamic personality whose thought was never of himself but always of others. He had the happy fortune of being able to give himself spontaneously, naturally, without apparent effort, and wholly unconsciously, to those in pain, sorrow and distress. His diagnostic judgment was sound, his understanding of human nature profound, his tolerance unfailing, and his sympathy unbounded. One seldom heard him give expression to thought of himself. In the Sanatorium his patients were devoted to him, and they trusted without the shadow of doubt to his interest in them and to his understanding of them.

He loved all people, and for him society was without stratifications. His professional interests and activities reached far beyond the Sanatorium. For several years he was a member, with Dr. Drewry and others, of the Board of Mental Hygiene that did so much good work amongst and for those in the Penitentiary. He labored with Dr. Drewry in creating and in confirming the interests of physicians and lay people in mental hygiene. No other two individuals did so much for that cause in Virginia. Dr. Royster was an alert attendant upon medical meetings; he participated in their activities; he was a diligent student, and he kept himself informed about the progress of medicine. Although he was shy and self-effacing, he associated genially with his friends, and easily with all others, and in the intimacy of such associations he acquired much knowledge of mankind that has never yet been typed. He loved the country, the fields, the woods, his dogs, the hunt, and the quiet, the natural, and the beautiful. In personal sickness and in that deep sorrow brought by the death of loved ones he was a steady support and a sympathetic friend. He was always busy, always quiet, always unhurried, always comforting, and never failing.

Two years and one month before his death he was married to Miss Louise Moss, the culmination of the love of his childhood, his young manhood, and of his mature years. He left no children, only splendid memories of a devoted husband and a friend to all the world.

He kindled and builded friendships as easily as some build fires, only these never grew dim nor died into ashes. He had a perfect gift for friendships, perhaps because he gave so much, so freely, and so continuously. Unconsciously, without art or effort, he walked into the hearts of men and women and won their affection and esteem. He will be missed in the profession, missed in his specialty and in his own hospital, but his going will leave an aching pang in the hearts of hundreds to whom he had endeared himself.

It is requested that this humble tribute to our friend and fellow member be written into the minutes of the Richmond Academy of Medicine and that a copy be given the VIRGINIA MEDICAL MONTHLY for publication.

Respectfully submitted,

J. K. HALL, *Chairman,*
R. FINLEY GAYLE,
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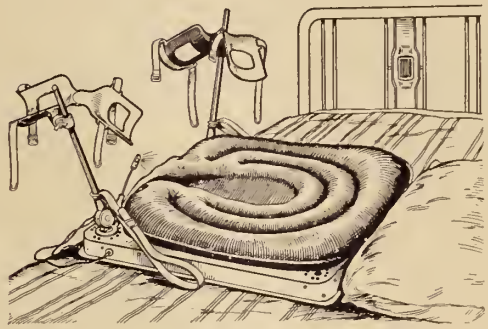

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> "That the application of fire in a manner variously adapted to various substances, after having with the utmost care and as completely as possible, deprived them of all contact with the air, effects a perfect preservation of those same productions, with all their natural qualities."

Appert's findings were made empirically years before the true causes of food spoilage were known. Today, it is evident that the success of his procedure was due to heat destruction of spoilage micro-organisms, such as are associated with raw foods, and protection from subsequent contamination by such organisms.

The sterilization procedure, or the "process" as it is termed in the industry, is an integral part of commercial canning. Essentially, it involves the heat treatment of foods sealed in hermetic containers after proper preparation; the preparatory procedures accomplishing, among other things, the removal of most of the air from the can.

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(1) The Art of Preserving, M. Appert, Black, Parry and Kingsbury, London, 1811.

(2) Thermal Process Time for Canned Foods, C. O. Ball, Natl. Res. Council Bulletin, v. 7 No. 37, 1923

(3) Preventive Medicine and Hygiene, M. J. Rosenau, Appleton-Century, N. Y. 5th Ed. 1927.

This is the third in a series of monthly articles, which will summarize, for your convenience, the conclusions about canned foods which authorities in nutritional research have reached. We want to make this series valuable to you, and so we ask your help. Will you tell us on a post card addressed to the American Can Company, New York, N. Y., what phases of canned foods knowledge are of greatest interest to you? Your suggestions will determine the subject matter of future articles.

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RICHMOND, VA., AUGUST, 1935

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THE TREATMENT OF POLIOMYELITIS

THE VIEWS OF VARIOUS STATE COMMISSIONERS OF HEALTH CONCERNING VACCINE IN PREVENTION AND IMMUNE SERUM IN TREATMENT

State	Vaccine in Prevention					Immune Serum in Treatment				
	For	For (with reservations)	Against	No experience	Neutral	For	For (with reservations)	Against	No experience	Neutral
Arkansas			+			+				
Alabama			+					+		
Arizona	+						+			
California		+								+
Connecticut					+			+		
District of Columbia					+			+		
Florida			+					+		
Illinois			+			+				
Iowa			+			+				
Indiana					+			+		
Kansas			+			+				
Massachusetts			+			+				
Missouri			+				+			
Michigan					+			+		
Maryland		+					+			
Maine			+			+				
Montana				+			+			
Nevada			+			+				
New York			+					+		
North Carolina		+						+		
New Mexico				+					+	
Ohio					+					+
Oklahoma	+					+				
Rhode Island	+					+				
South Carolina			+				+			
Tennessee				+				+		
Utah				+		+				
Virginia			+					+		
Washington			+			+				
West Virginia				+						+
Wisconsin				+				+		
Wyoming				+					+	
	3	3	14	7	5	11	5	11	2	3
	6					16				

The above table is based on answers to a letter recently sent by the Editor to all State Health Commissioners, asking their attitude concerning vaccine in prevention and immune serum in treatment.

THE SERO-DIAGNOSIS OF ENTERIC FEVER WITH SPECIAL REFERENCE TO THE METHOD OF QUALITATIVE RECEPTOR ANALYSIS.*

SAMUEL R. DAMON, Ph.D.,†
Baltimore, Md.

INTRODUCTION

In illness, responsibility for diagnosis rests, ultimately, with the clinician. In making his diagnosis, however, the clinician is entitled to such assistance as may be rendered by the clinical pathologist. That is, the physician should take full advantage of such diagnostic laboratory facilities as are available. Only by doing so can he at times get that information which will confirm his tentative conclusion, based on the observations which he has made at the bedside, or make possible the positive differentiation of conditions closely resembling each other in their physical signs and symptoms.

In the diagnosis of typhoid or paratyphoid fever the foregoing remarks are eminently applicable and yet how frequently resort to laboratory tests, in these enteric fevers, results in confusing the issue. This is particularly true when blood specimens are submitted from suspected cases for serological examination. It is important, therefore, to have an understanding of the limitations to which an immunological test, such as the agglutination reaction, is subject.

DIAGNOSIS BY THE WIDAL TEST

For many years the serological diagnosis of enteric fever was made by the microscopic Widal[1] test in which suspensions of known organisms were incubated with dilutions of the patient's serum in hanging drop preparations. In these tests agglutination was observed when the serum containing the agglutinin was mixed with a suspension of the homologous organism.

Though helpful, this was not a perfect diagnostic test as it was generally negative in early cases and occasionally failed to become positive at any time in some cases clinically diagnosed as typhoid; it involved some risk due to the use of living organisms as antigens, and it was impossible to accurately standardize the bacillary suspension employed. These, and other factors reduced the test to one that was essentially qualitative and not quantitative, the point at issue being the presence or absence of specific agglutinins and not their precise titre in the serum.

In the interpretation of Widal-test results it was soon recognized that the serum of uninfected persons might contain agglutinins in low titre and an attempt was made to overcome this difficulty by setting up diagnostic standards. That is, some such arbitrary standard as complete agglutination in thirty minutes in a dilution of 1:50 of the patient's serum was adopted and reactions as strong as, or stronger than this were regarded as positive, while those occurring in weaker dilutions were considered as negative or, at most, suspicious.

The inherent weakness of such a technique soon became obvious. Bacillary suspensions of the same or different strains varied so in their sensitivity to agglutinins that it was found next to impossible to adopt any particular titre, as marking the probable limit of normal agglutination, that would have the same significance for all laboratory workers.

The one advantage of this microscopic Widal test was that it could be carried out on a small sample of the patient's blood. Thus there was a period in which samples of dried blood were submitted on prescription blanks, blotting paper, calling cards, glass slides, etc.

Furthermore, the increasing use of prophylactic vaccine has still further impaired the value of the Widal test as a diagnostic aid since the serum of vaccinated persons, as well as that of individuals who have had previous enteric fever, may give similar reactions to those obtained in active cases of infection. And, finally, the matter was reduced to a state of utter confusion when it was established that individuals, who at any time had had

*Presented by invitation before the Gibson County Medical Society, Trenton, Tennessee, March 25, 1935.

†From the Department of Bacteriology of the School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md.

enteric fever or had been prophylactically vaccinated, might give positive agglutination reactions under the stimulus of any febrile condition whatever. This has been referred to by Conradi[2] as the anamnestic reaction.

To recapitulate then, the present status of the sero-diagnosis of enteric fever, by means of the classical Widal reaction, is that agglutination in diagnostic titre may be observed in the patient's serum under the following circumstances:

1. If the patient has or is convalescent from enteric fever.
2. If the patient has had enteric fever at some time in the past and continues to show antibodies in his serum.
3. If the patient has received prophylactic anti-enteric vaccine and continues to show antibodies in his serum.
4. If the patient, suffering from an unrelated febrile condition, exhibits an anamnestic reaction due to previous enteric infection or inoculation with anti-enteric vaccine.

With these limitations in mind and with an increasingly large proportion of the population having received prophylactic vaccination—at least in certain sections of the country—it is obvious that the sero-diagnosis of enteric fever by the classical Widal test is difficult, if not impossible, in many cases.

Conclusion of the discussion at this point might well leave the clinician in a hopeless quandary, but it is believed that further examination of the information available will point the way out of the difficulty. The real point at issue is as to whether there is any means by which agglutinins, due to prophylactic inoculation or a non-specific stimulation, as encountered in an anamnestic reaction, may be distinguished from those produced in response to a veritable infection. The answer to this question is that such a distinction can be made by the method designated by Felix[3-4] as that of Qualitative Receptor Analysis.

The Theory of Diagnosis by Qualitative Receptor Analysis

In brief, this is an agglutination reaction based on the observations made by Smith and Reagh,[5] and extended by Felix and others, that in a motile bacillus there are two distinct antigens—one associated with the flagellar, and the other with the body or soma of the organism. These have come to be known as the H and O antigens—the reference being to their flagellar and somatic origin—and it is now known that in the inoculated or infected individual each gives rise to its specific antibody. We therefore have H and O antigens and their corresponding and specific H and O antibodies, receptors, or agglutinins. As a corollary to this notion it follows that a non-motile, that is, non-flagellated organism, has no H antigen and its antiserum cannot contain H antibodies.

The usefulness and significance of estimating H and O agglutinins in the blood of patients suspected of having enteric fever lies in the fact that they provide a means by which we may distinguish between the antibodies resulting from immediate infection and those stimulated by vaccine or remaining from an earlier infection, or produced in the course of an anamnestic reaction. This differentiation in the laboratory is accomplished by simple inspection as separate antigens are employed—one especially adapted to show the presence of H agglutinins and the other prepared so as to indicate the content of O agglutinins in the serum of the patient.

In the application of the knowledge now available with regard to H and O agglutinins in the serum of persons having suspected enteric fever, the physician should bear in mind the following facts:

1. In those individuals who have never had enterica or been vaccinated:
   a. H and O agglutinins may at times be present but the titre rarely exceeds 1:50 for the former or 1:100 for the latter.
   b. A titre of 1:100 for the H antibody is diagnostic and indicates the infecting species.
   c. A titre of 1:200 for the O antibody may be taken as indicative of enteric infection but does not identify the infecting organism.
   d. In those cases where O antibodies alone are present the diagnosis can only be "enteric infection, type undifferentiated."
2. In individuals who have had previous enterica or been vaccinated:
   a. When antibody formation has been stimulated by either active acquired infection or by vaccination both H and O agglutinins are formed in most cases. However, the O antibodies disappear rapidly—usually in about six months—and do not re-appear except as the result of specific

stimulation. On the other hand, the H agglutinins disappear more slowly and may subsequently reappear as the result of non-specific stimulation.

b. H agglutinins are of no value in diagnosis in these cases except in those instances where a monovalent vaccine has been used and the H antibodies detected in the diagnostic test are for one of the other organisms in the typhoid-paratyphoid group.

c. The detection of O agglutinins in any single diagnostic test in a titre of 1:200 is generally significant of active infection but does not identify the infecting species.

d. A marked rise in the O agglutinin titre in repeated tests makes possible a definite diagnosis of "enteric fever, type undifferentiated."

e. In the presence of a high H agglutinin titre but no rise in the O titre enteric infection is ruled out and the agglutination accounted for on the basis of an anamnestic reaction.

If, at this point, then, we assume that the laboratory is prepared to analyze the antibody content of the patient's serum by the method of qualitative receptor analysis, the question that presents itself to the clinician is as to the interpretation of the results in the types of individuals that he may have to deal with, namely, those that *have not* had previous enteric fever or been vaccinated and those that *have* had previous enteric infection or been vaccinated.

Application of Qualitative Receptor Analysis

A. H and O agglutination in persons who have not had pervious enterica or vaccinations.

Before attempting to evaluate the results of specific tests in individuals falling in this category the possibility that these agglutinins may *normally* be present in such sera must be disposed of and experience shows that sometimes such may be the case. In these instances, however, the titre is low, seldom exceeding 1:50 for the flagellar (H) antibody or 1:100 for the somatic (O) antibody.

With regard to the relative titres of the two antibodies in patients no hard and fast rule applies. That is, the laboratory may find that in an uninoculated individual suffering from enteric fever, the titre of one antibody may be less than, may be the same as, or may exceed the other. As a general thing, however, in such patients a titre of 1:100 for the H antibody may be taken as diagnostic and as indicating the infecting species inasmuch as the flagellar agglutinins are species specific.

In those instances, though, in which the infecting organism is a non-motile variant of the normally motile typhoid bacillus, there will, of course, be no H antibodies in the patient's serum. Under these conditions the titre of O agglutinins only will be reported and as the somatic antigen is common throughout the typhoid-paratyphoid group the diagnosis can only be "enteric infection, type undifferentiated." Regardless of the motility of the infecting organism, though, a titre of 1:200 for the O antibody should be demonstrable before being taken as significant of infection.

As illustrating the antibody response, in terms of flagellar and somatic antibodies, in uninoculated patients with no history of previous enteric fever, the cases in Table 1 may be taken as typical. In interpreting these results the presence of H agglutinins in diagnostic titres is obvious but the appearance of O antibodies in significant titre should also be noted. The absence of confusing H antibodies for the heterologous organisms and the appearance of group O agglutinins in low dilution only, are also worthy of note, and, lastly, the significant rise in antibody titre as demonstrated in samples taken at intervals of but a few days is to be regarded as of the utmost importance in diagnosis.

B. H and O agglutination in persons who have had previous enterica or vaccination.

It is in the examination of sera from patients having histories of previous enteric fever or prophylactic vaccination that the method of qualitative receptor analysis finds its greatest usefulness. In these cases the classical Widal loses its value because it may be positive due to (1) residual agglutinins produced under the stimulus of either the earlier infection or vaccination or (2) recalled in the course of an anamnestic reaction due to an unrelated febrile condition. Experience has shown, however, that this agglutination is due almost exclusively to the presence in the serum of antibodies that react only with the flagellar antigen in the organisms used in setting up the Widal tests. In other words, it has been observed that whereas both H and O anti-

TABLE 1

AGGLUTINATION REACTIONS IN TERMS OF H AND O ANTIBODY RESPONSE IN THE SERA OF PATIENTS WITH ENTERIC FEVER. NON-VACCINATED INDIVIDUALS.

Case	Day of Illness	Blood Culture	Serum Dilution	Agglutination Reactions						Remarks
				B. Typhosus.		B. Para A.		B. Para B.		
				H.	O.	H.	O.	H.	O.	
1	9	B. typhosus	1-50	+	+	—	+	—	+	Typhoid fever
			1-100	+	+	—	—	—	+	
			1-200	+	+	—	—	—	—	
			1-400	+	—	—	—	—	—	
2	14	B. paratyphosus Beta	1-50	—	+	—	+	+	+	Paratyphoid fever
			1-100	—	+	—	±	+	+	
			1-200	—	—	—	—	+	+	
			1-400	—	—	—	—	+	—	
3	8	B. paratyphosus Alpha	1-50	—	+	+	+	—	+	Paratyphoid fever
			1-100	—	+	+	+	—	+	
			1-200	—	—	+	±	—	—	
			1-400	—	—	+	—	—	—	
4	7	Sterile	1-50	—	+	—	+	—	+	Serologically enteric fever Type undifferentiated but the increase in the "O" titre for *B. typhosus* strongly suggests typhoid infection.
			1-100	—	+	—	—	—	+	
			1-200	—	+	—	—	—	—	
			1-400	—	+	—	—	—	—	
	10	Sterile	1-50	—	+	—	+	—	+	
			1-100	—	+	—	—	—	+	
			1-200	—	+	—	—	—	—	
			1-400	—	+	—	—	—	—	
			1-800	—	+	—	—	—	—	

bodies are produced in enteric fever and as a result of prophylactic vaccination, the O agglutinins often disappear rapidly, that is, in the course of a few months, while the H or flagellar antibodies persist for a much longer time. Another observation that it is necessary to recognize, is the fact that when the O or somatic agglutinins have been lost from the serum, it is a permanent loss in contrast to the fluctuations of the H antibodies, which may be demonstrable for an indefinite period or may disappear for a time, only to reappear again under the stimulus of a new enteric infection, a new inoculation, or an unrelated febrile state.

From the foregoing, then, it would seem that a relatively high titre of O agglutinins would have a greater diagnostic significance than the same or a higher titre of H antibodies in the serum of a person who has had previous enterica or been vaccinated.

As a matter of fact, sero-diagnosis by the method of qualitative receptor analysis in patients with a history of previous infection or inoculation, is based entirely on the content of O antibodies. If the titre of these agglutinins equals 1:200 it should be considered as probably indicating active infection—unless the vaccination has occurred within six months—and as it exceeds this figure its significance proportionally increases. From this it is obvious, then, that very important information will be obtained by repeated tests, made at intervals of a few days or a week, a sharp rise in titre of the O antibodies being construed as positive evidence of active infection.

The results of typical tests on sera falling under this heading are presented in Table 2. From these tests it will be seen that although the sera in most cases contained both H and O antibodies on first examination, it is the titre of or rapid rise in the O agglutinins that established the diagnosis of "enteric infection"—without indicating the species of the infecting organism—as the appearance of the H antibodies bears no significance due to the earlier prophylactic inoculation.

C. H and O agglutination in cases exhibiting the anamnestic reaction.

Finally, there remains to be considered the possibility of the non-specific stimulation of antibody production in a patient having a history of previous enterica or inoculation. This response simulates the antibody rise seen in infection in an inoculated person unless the serum is analyzed for its content

TABLE 2

AGGLUTINATION REACTIONS IN TERMS OF H. AND O. ANTIBODY RESPONSE IN THE SERA OF PATIENTS WITH ENTERIC INFECTION. VACCINATED INDIVIDUALS.

(T. A. B. VACCINE)

Case	Day of Illness	Serum Dilution	Agglutination Reaction						Remarks
			B Typhosus.		B. Para A.		B. Para B.		
			H.	O.	H.	O.	H.	O.	
		1-50	+	+	+	—	+	+	Serologically typhoid fever. *B. typhosus* isolated from blood.
1	12	1-100	+	+	+	—	+	—	
		1-200	+	+	—	—	+	—	
		1-400	+	+	—	—	+	—	
		1-50	+	+	+	+	+	+	Serologically typhoid fever. *B. typhosus* isolated from stool.
2	14	1-100	+	+	+	—	+	+	
		1-200	+	+	+	—	+	—	
		1-400	+	+	—	—	—	—	
		1-50	+	+	+	+	+	+	Serogically Para A infection. *B. paratyphosus. A* isolated from blood.
3	9	1-100	+	±	+	+	+	±	
		1-200	+	—	+	+	+	—	
		1-400	+	—	+	+	+	—	
		1-50	+	+	+	+	+	+	
	10	1-100	+	+	+	+	+	+	Serologically Para B infection. *B. paratyphosus B,* isolated from blood.
		1-200	+	—	+	—	+	+	
		1-400	±	—	—	—	+	+	
4		1-50	+	+	+	+	+	+	Note the rise in the *B. paratyphosus B,* "O" agglutinins..
		1-100	+	+	+	+	+	+	
	16	1-200	+	+	+	—	+	+	
		1-400	+	—	—	—	+	+	
		1-800	+	—	—	—	+	+	
		1-1600	—	—	—	—	+	+	

of H and O agglutinins. If this analysis is not made, it appears, in examining such sera by the classical Widal test, that there is a marked rise in specific agglutinins. However, when the method of qualitative receptor analysis is employed, it is found that the increase has been in the H antibody only. Such an increase in titre of the flagellar agglutinins without a concomitant rise in the O antibody is to be interpreted as an anamnestic reaction and as having no diagnostic significance. However, if this increase in H titre should be accompanied by a significant increase in the O titre it would indicate that we were dealing with a case of enteric group infection and the diagnosis could be made on this basis. The results of typical tests on sera falling into this category are presented in Table 3.

TABLE 3

ANAMNESTIC REACTION. AGGLUTINATION REACTION IN TERMS OF H AND O ANTIBODY RESPONSE IN THE SERA OF PATIENTS SUFFERING FROM VARIOUS NON-TYPHOID DISEASES. INOCULATED INDIVIDUALS.

Case	Day of Illness	Serum Dilution	Agglutination Reactions						Remarks
			B Typhosus.		B. Para A.		B. Para B.		
			H.	O.	H.	O.	H.	O.	
1	12	1-50	+	—	—	+	—	—	Agglutination due to monovalent typhoid vaccine. Nature of illness unknown.
		1-100	+	—	—	+	—	—	
		1-200	+	—	—	—	—	—	
		1-400	+	—	—	—	—	—	
		1-50	+	+	+	—	+	+	Agglutinates *B. Proteus* X19 1-2000. Reaction due to T. A. B. vaccine.
2	14	1-100	+	—	+	—	+	—	
		1-200	+	—	±	—	+	—	
		1-400	+	—	—	—	+	—	
		1-50	+	+	+	+	+	+	Agglutinates *B. melitensis* 1-2560. Reaction due to T. A. B. vaccine.
3	22	1-100	+	+	+	±	+	+	
		1-200	+	—	—	—	+	—	
		1-400	+	—	—	—	+	—	

SUMMARY

From the preceding discussion it appears that:

1. In any suspected case of enteric infection direct diagnosis by blood culture should always be attempted.

2. In any case of suspected enteric infection the true history of the patient with regard to previous enterica or inoculation *must* be ascertained before an intelligent interpretation of any serological tests can be made.

3. In suspected cases having no history of previous enteric infection or prophylactic vaccination a titre of 1:100 for the H agglutinin is diagnostic and indicates the infecting species. In those instances where a non-motile variant of an enteric organism is the infecting agent a titre of 1:200 for the O antibody should be demonstrable before being taken as significant but does not indicate the species causing the infection. Under such circumstances, the diagnosis can only be "enteric infection, species undifferentiated."

4. In suspected cases having a history of previous enterica or prophylactic vaccination with a polyvalent vaccine the H antibodies demonstrated have no diagnostic significance, whereas the finding of O agglutinins in titres of 1:200 or over permits the definite diagnosis of "enteric infection, species undifferentiated." In those instances where a monovalent vaccine has been employed demonstration of H antibodies for the heterologous organisms is of the same significance as in the uninoculated.

5. In suspected cases having a history of previous enterica or prophylactic inoculation in which an increase in the H antibody only is demonstrated, the diagnosis of enterica is definitely ruled out and the agglutination accounted for on the basis of an anamnestic reaction.

6. In any suspected case a marked rise in titre for the O agglutinins, as determined in tests made at intervals of a few days, is of the greatest significance in establishing the diagnosis.

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SURGICAL TREATMENT OF 183 CONSECUTIVE THYROID CASES WITH NO MORTALITY.*

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This is a study of a series of consecutive thyroid cases operated upon at St. Elizabeth's Hospital, Richmond, Virginia. It includes all cases from October 1, 1923, to July 1, 1934, and while the series is not large, 183 in all, it includes almost all types of thyroid disease, and there were no operative mortalities. These cases have been followed as well as possible, and the results have been carefully analyzed. The ages range from a girl five years of age, who had a marked exophthalmic goiter, to a woman seventy years of age.

Within the past ten years there has been a marked revolution in thyroid surgery. Previous to this time it was considered very dangerous to operate upon extremely toxic cases, and if these cases finally required an operation, it was done in multiple stages. First, the superior thyroid arteries were ligated and the removal of the thyroid lobes was done separately and at different times. Even with this extreme care the mortality was high, and deformity of the neck due to multiple operations and a disfiguring scar often resulted even if the patient survived.

Beginning with the use of iodine pre- and postoperatively, the practice of Crile's operative technic, and the intravenous administration of dextrose in Ringer's solution, the mortality rate has fallen and

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the end-results have been most gratifying. The operative treatment of toxic thyroid cases is no longer looked upon as a grave procedure and a large majority of these cases come out with practically invisible scars and excellent therapeutic results. Multiple operations and the tying of the thyroid vessels as a primary procedure is a thing of the past. We have followed the principles of a definite procedure in all our thyroid cases in both the toxic and non-toxic, but have varied the details to suit the individual case. All thyroid patients have a basal metabolism test before operation. If the metabolism rate is high, that is 30 plus or above, the patient is kept in bed several days with ice caps to the neck and is given iodine and sedatives. The metabolism test is repeated and when it is below plus 30 and the general toxic symptoms have subsided, the operation is done. If the patient is not a toxic case, then the pre-operative treatment is short and simple, the patient being required to stay in the hospital the night preceding operation and only the regular routine procedures are carried out.

We have found the use of avertin to be a great aid and now almost indispensable as a basal anesthetic. Before the advent of avertin we used the so-called "gas treatment." The patient was brought quietly to the operating room at the hour usually fixed for operation, and while still on the stretcher, oxygen with small amounts of ethylene was given. This was repeated each day, before giving the patient breakfast and increasing the amount of ethylene until finally the patient was completely anesthetized and the operation was performed. The patient became excited and the pulse rapid after the first two such treatments, but was soon accustomed to such experiences and at the time of operation no excitement was noticeable. This is the procedure of "stealing the thyroid," initiated by Crile.

With the use of avertin we now have a simpler and most satisfactory method. A small saline enema is given in the morning before breakfast every day. On the day of operation the avertin is given in the enema and the patient goes to sleep in bed. As a rule we use from 75 to 85 mgms. of avertin per kilogram of body weight, but this dose must be varied with the individual. The more toxic the patient, the large the amount of avertin will be required to produce sleep. The avertin is always supplemented with ethylene in the operating room.

The principles of gentleness and careful technic are most valuable and, along with the method of leaving the posterior portion of the thyroid, the recurrent laryngeal nerves, and the parathyroid glands untouched and not dissecting out the neck structure, as has been stressed by Crile, have been faithfully followed. The results which we have obtained demonstrate the value of this method.

Fig. 1.—Mrs. F. C. D. Operated upon March 9, 1934. Picture taken eight days after operation. The subcuticular suture is still in place.

The incision is made curved slightly downward from the sternomastoid muscles on one side to a corresponding point on the other side. The lower portion of the incision at the midline of the neck is about one and one-half inches above the sternum. The skin flaps are dissected up and down, and the ribbon muscles are split longitudinally from the larynx to the sternum. The isthmus of the thyroid is then divided in the midline down to the fascia covering the trachea, care being taken not to injure this latter structure. On the right side the isthmus is dissected from the trachea and the dissection is carried along the upper border of the lobe where its attachments are clamped and divided. The lobe now comes easily into the wound, and the vessels along its outer margin are clamped. With the vascularity blocked off in this way, the lobe is dissected

up in such a manner that a thin layer of thyroid tissue is left covering the recurrent laryngeal nerve, the parathyroids and the tissues about them. This same procedure is repeated on the other lobe of the thyroid.

Fig. 2.—Mr. J. H. P. Operated upon May 22, 1934. Picture taken fourteen days after operation. The s.w.g suture has been removed, leaving no suture marks.

All bleeding is controlled by ligating the larger vessels and by whipping over the thyroid tissue with plain catgut in a fine needle. The ribbon muscles are then sutured together and a small rubber tube is placed between them as a drain. This drainage tube is brought out through the middle of the incision. The subcuticular tissue and the platysma are united with plain catgut and the skin is sutured in two sections with a subcutaneous stitch of silkworm gut. The tube drains blood-tinged serum for the first twenty-four to forty-eight hours, after which time it is removed.

There was no injury to the recurrent laryngeal nerve in any of these cases. Immediately after operation we always watch carefully for any impairment or change in tone of the voice. This has not been found in any case.

Only one case had, apparently, any injury to the parathyroids, and this was expressed by post-operative tetany. The tetany was easily controlled by the use of calcium and parathormone. Both of these therapeutic measures were discontinued after several months without the recurrence of the tetany.

In this series of cases there has been no post-operative bleeding, and no secondary closure of the wound has been necessary. Only one toxic case was closed without drainage and after twenty-four hours this patient became so toxic that the central portion of the wound had to be opened and a small drainage tube inserted, after which the patient's convalescence was normal. The drainage tube not only prevents the collection of serum beneath the ribbon muscles, but also removes any thyroxin that might have been squeezed into the wound during the operation. This type of operation is not as pretty from an anatomical point of view as when a wider dissection is done and all of the surrounding structures are exposed and recognized, but it is more biological and consequently gives better results.

All toxic cases are given dextrose in Ringer's solution intravenously during and after the operation, and, as a rule, this is run continuously for the first twenty-four to forty-eight hours. It has been found to diminish greatly the post-operative toxicity, for it furnishes carbohydrates as a buffer to be burned instead of the body tissues. Since some of these patients have discomfort in swallowing, dehydration might occur if they had to depend entirely upon fluids by mouth. The administration of fluid

Fig. 3.—Mrs. M. L. H. Operated upon October 26, 1927. Picture taken three months after operation.

by proctocylsis and hypodermoclysis could be done, but in neither of these methods could dextrose be satisfactorily and sufficiently absorbed to combat thyrotoxicosis.

The youngest toxic case was that of a girl, five

years of age, who had, apparently, a metabolism rate of plus 70, operated upon in April, 1931. Due to the extreme toxicity and the age of the patient, we were unable to determine accurately the metabolism. There was a definite exophthalmos and the pulse rate before operation ranged from 140 to 170. She was treated in the usual way, as outlined above, but because of the small size of her veins she was not given much dextrose intravenously at first. The second day she became quite toxic and looked very sick. At this time an intravenous cannula was inserted and she was given dextrose in Ringer's solution by this method. The pulse and temperature immediately began to subside, and within twenty-four hours her toxic symptoms disappeared. Her remaining stay in the hospital was uneventful. She has had no subsequent trouble and is now a normal child in every respect.

Ice caps to the head, heart and neck are applied and kept in place constantly until the temperature and pulse are satisfactory. If the temperature is high, 103 or above, ice packs may be used. However, this has not been necessary within the past six years. Iodine is continued in the toxic cases, being given by rectum for the first two or three days, and when nausea has ceased, it is given by mouth. The dextrose in Ringer's solution is given intravenously every day until the patient is able to take sufficient amounts of food and fluid by mouth; this often occurs on the first or second post-operative day. The drainage tube is removed on the second or third day, and the sutures are removed about the eighth day. During this time the incision is dressed and the drainage tube track probed every day to prevent the accumulation of fluid under the skin. These patients are usually kept in the hospital from nine to twelve days. A check-up metabolism test is done on each of these patients before leaving the hospital. This has been found to be very useful in the after-care of these cases.

The diagnosis on the total series of 183 cases is divided into three groups: the toxic, non-toxic, and malignant. There were 118 toxic cases, including both the simple cases of hyperthyroidism and the exophthalmic cases; sixty-one non-toxic cases, and four cases of malignancy. The non-toxic cases were those of cystic and fetal adenomas and simple colloid goiter. The four malignant cases were all adenocarcinoma, from grades 3 to 4 plus.

As has been stated, these cases have been followed and recently all were sent a questionnaire asking about their condition subsequent to operation and at present. One hundred and twenty-one (121) re-

Fig. 4.—Mrs. V. W. B. Operated upon August 5, 1927. Picture taken eight months after operation, showing that the scar is practically invisible.

plies were received. This questionnaire contained ten questions comprising the return of the pre-operative symptoms, gain in weight, recurrence of neck enlargement, interference with swallowing, results of the scar, and the patient's opinion of the results of the operation. There are only three patients who were not absolutely sure that the results were excellent, and all of these were very toxic cases. One of these three answered "no" to all questions, and, incidentally, is a mental case, and had been and is now in a neuropathic institution. The other two have apparently mild recurrences of their pre-operative symptoms, since they state that they still have occasional attacks of nervousness, tremor and cardiac palpitation. They refuse any further examination; consequently, the exact nature of their results cannot be accurately ascertained. About 60 per cent of all cases reported a gain in weight. This percentage was larger in the toxic cases than in the non-toxic ones. Only five had noticed any pulling or difficulty in swallowing at any time, and in those five cases this had been transient and not present when question was answered. Three cases reported slight discomfort from the scar, the majority saying that the scar never caused any symptoms and was practically invisible.

Three cases required a second operation. They were very toxic and young individuals with a metab-

olism of plus 40 to plus 56 before operation. Following the first operation there was apparently a rapid regeneration of the remnant of the thyroid tissues with resultant recurrence of the symptoms. After the second operation the symptoms have disappeared and the metabolism has remained normal or below normal. It has been our experience that the best results are obtained in toxic cases if the metabolism is definitely minus soon after the operation, since there is always slight regeneration of the remaining thyroid tissues.

Of the four carcinomas of the thyroid, one case now has local and bone metastases after four years; one case has no evidence of recurrence after three years; one case died of recurrence in two months; and the fourth had no evidence of recurrence when last heard from, eighteen months after operation. In the treatment of these cases the tumor was excised and radium inserted at the time of operation. This was further supplemented by X-ray therapy over the thyroid region before the patient left the hospital and again in a period of several months.

DISCUSSION

DR. C. BRUCE MORTON: I enjoyed this paper very much, and I think it is a very nice presentation of results which are so satisfactory now that there has been so much relatively recent improvement in the treatment of thyroid disease.

There has been great improvement in results in recent years, and everyone realizes that it is due chiefly to pre-operative preparation of these patients, to some degree to the operative technique, and to a great degree to post-operative care. Iodine has made the treatment of thyroid disease a very different matter than what it used to be.

There is one point which might be stressed, the patient's general condition, as expressed in the weight especially. We have found that of very great importance. A patient, even though the metabolism may be going down, or may be down fairly satisfactorily, will stand the operation much better when the weight is on the upgrade, than in instances when the weight is stationary or not going up.

Concerning the technique of the operation as described, very little can be added. A great many surgeons prefer the division of the ribbon muscles so as to obtain a more adequate exposure, certainly with large goiters and some vascular goiters. It makes possible the ligation of the main vessels of the thyroid before the thyroid tissue is actually incised; it does minimize the bleeding to some extent.

Another technical feature which we use to advantage, I believe, is the introduction of drainage tubes at the angles of incision rather than through the center. I have seen central drains, particularly if the drainage has been for any reason a little more persistent than usual, form a cicatrix which may adhere to the deeper structures and cause dysphagia, which is very unpleasant to the patient.

Dr. Horsley mentioned the height of the incision from the sternum as an inch and a half. I am under the impression that our incision is usually lower, so that the scar of the incision lies in the region covered by a small necklace. I see from his pictures, however, that the incision seems to be a little lower than the inch and a half mentioned would indicate.

We have found it occasionally necessary to do stage operations, ligation of vessels. We had a woman not long ago with a very toxic thyroid complicated by a pregnancy, in which the ligation did seem to be desirable. Even so, she had a very acute reaction after the thyroidectomy. The reaction responded promptly, however, to ice packs and the use of cold infusions.

DR. STUART MCGUIRE, Richmond: I congratulate Dr. Horsley sincerely on the long series of goiter cases he is able to report treated at St. Elizabeth's Hospital without a death and with such satisfactory results. The record is especially creditable when it is remembered that many of the cases were treated ten years ago at a time when the management of thyroid disease was not understood as it is today.

When I begun to operate on goiter patients, more than thirty years ago, the dangers of the operation were listed under five heads, namely: the anesthetic, hemorrhage, shock, infection, and injury to the recurrent laryngeal nerve.

After Kocher, of Switzerland, and Halsted, Mayo, Crile and others in America had perfected the technique of the operation, then for the first time was the danger of an acute hyperthyroid flare-up after the operation fully realized. In order to lessen the last named danger, various modifications were made in the method of handling these patients. The anesthesia was changed from chloroform and ether to gas oxygen, ethylene or the local use of novocaine. Preliminary ligation of the superior thyroid artery was practiced by many surgeons on many cases. The wound was often left open, packed with gauze, and not closed for several days in order to give complete drainage. Finally, in bad cases operation was often done in several stages sometimes a bad case being operated on four or five times before the work was completed. It was not until the introduction of the basal metabolism test, which came into general use about twenty years ago, that the surgeon was able to tell the danger of an acute hyperthyroid reaction in a given case, and was able to measure the efficiency of the various means that were employed to prevent or combat it. It was not until this time that the surgeon fully realized the great necessity of the proper preparation of a patient before the operation.

Some years ago it was generally believed, owing to the teaching of Kocher and Halsted, that iodine was very bad for these cases. Surgeons who used iodine for the

preparation of the skin in other operations avoided it in goiter. It was not until Plummer ten years ago introduced the administration of iodine in the form of Lugol's solution in the preparation of patients that this fallacy was overcome.

With the perfection of the modern technique of operation by which hemorrhage is prevented and injury to the recurrent laryngeal nerve is avoided, with the introduction of the basal metabolism test by which the danger of acute hyperthyroidism can be estimated, and with the administration of iodine by which patients can be gotten in good condition for operation, the surgery of goiter has now been rendered safe and easy. We no longer fear a general anesthetic under gas oxygen or ethylene. We no longer do preliminary ligations or many stage operations, but, by the preparatory treatment so well described by Dr. Horsley, we are able to do a complete one-stage operation without mortality in 99 out of 100 patients. The cases that still give us an occasional death are the patients with a badly damaged heart from long continued thyrotoxic poisoning. These late neglected cases are not seen now as often as they were in the past. In fact, goiter surgery has become so easy that it has ceased to be exciting.

DR. L. D. KEYSER, Roanoke: I think Dr. Horsley is to be highly commended for the presentation of this series of cases, as it shows what coordination of various factors in approaching thyroid disease will accomplish.

There are certain types of cases, however, where I feel that the operation of thyroidectomy, as Dr. McGuire has said, is still of intense interest in taxing our surgical resources. I have two cases that I wish to present as illustrative of this point. One of these had a huge, hard gland, present for several years, which proved to be an infiltrating carcinoma. In the process of removal, we found no line of cleavage. The landmarks were all obliterated. Current opinion is uniform in the belief that the best treatment here is to remove as much of the tissue as possible surgically, and then to treat residual tissue by X-ray therapy. This patient presented tremendous technical difficulties at operation because of the size of the gland and the extensive infiltration present.

However, with the electric knife, we did finally remove most of the tissue, something over a pound in weight. The remainder responded very nicely to X-ray treatment. Microscopic section showed adenocarcinoma Grade II. It is now six months since her operation. The patient has an excellent scar and no evidence of recurrence.

The next case is that of a huge intrathoracic goiter in a blind man sixty-two years of age. This case also presented technical difficulties in the delivery of the lobes from the chest. We were able to bring them out, using Leahey's method of traction from above with digital pressure from below. A huge cavity was left. After a stormy convalescence, the patient temporarily recovered. However, pathological examination revealed adenocarcinomatous degeneration, Grade IV. X-ray, while being tried, will be of little avail here.

These groups of cases will certainly threaten our records at times, as we strive to keep our mortality near the zero point.

DR. J. SHELTON HORSLEY, Richmond: Among the cases reported by Dr. Guy W. Horsley there is one of total thyroidectomy for heart failure. This case was worked out very fully by my partner, Dr. Douglas G. Chapman, and I did the operation. The patient, in addition to his cardiac condition, had marked pain over the gall-bladder, and X-ray examination some time before the operation on the thyroid seemed to show there was distinct disease of the gall-bladder. It was thought, however, that, in view of his rather critical cardiac condition, it was wise to better this first, thinking also that possibly the pain over the gall-bladder might be due to the cardiac condition. I did the total thyroidectomy according to the method of Blumgart and his associates of Boston. The operation is rather tedious and differs technically from a subtotal thyroidectomy because of the practically normal thyroid condition and also because of the necessity for avoiding injury to the recurrent laryngeal nerves and the parathyroids.

The patient made a satisfactory recovery, but nine days after the operation he had a typical gall-bladder attack. Fifteen days after the thyroidectomy I removed the gall-bladder.

His sense of pain, discomfort, and oppression in the chest has been almost entirely relieved but he now has rather marked ascites and is still under observation by Dr. Chapman.

OBSTETRICAL SHOCK.*

M. PIERCE RUCKER, M. D.,
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Any one who has practiced medicine for a number of years has cases that stand out as if etched in his memory. The majority of my cases that belong to this class are those of obstetrical shock. I thought that a clinical review of them might prove interesting to you.

John Collins Warren described shock as a momentary pause in the act of death. This strikes one as

a very apt description, especially when one has the responsibility of the patient in shock. Every war brings a renewed interested in the subject of shock in general, and many great names in the history of medicine are associated with its study—Paré, Weir Mitchell, Erlanger, Crile, and Cannon, to mention only a few,—until now we have a fairly accurate idea as to what happens in traumatic shock. Blalock in his Arthur Dean Beven lecture has given us an interesting and authorative review of the subject to date. The shock that sometimes follows the puncture of a body cavity, i. e., paracentesis, or the emptying of an over-distended viscus, such as the urinary bladder in prostatic enlargement, is not so well understood. Obstetrical shock occupies an intermediate position between these two groups.

Obstetrical shock may be divided into three groups: (a) that due to hemorrhage; (b) other conditions well recognized as causing shock that may be concomitant with labor; (c) shock with no discoverable cause. The first group needs no explanation. The second group includes such conditions as ruptured appendix, perforating gastric ulcer, ovarian cyst with twisted pedicle, etc. They are to be borne in mind because they may occur in labor and are then very difficult to diagnose. Unfortunately the diagnosis usually is not made until an autopsy is done. I know of one case of duodenal ulcer that belongs in this group. Wehrung and Nerson have recently reported a very instructive case. A thirty-two-year-old XI-para went into shock one and one-half hours after a normal labor and died one-half hour later. Autopsy showed two liters of blood in the periotoneal cavity and a necrotic cyst of the right ovary the size of an adult's head. Furthermore, there was a cancer that partially encircled the colon and a perisigmoidal abscess. It is the third group, in which hemorrhage plays no etiological role and in which there is no discoverable cause, that I wish to discuss today.

CASES

No. 1,776, W., F., M., aet. 40. Patient has been married twenty-two years. She has four living children. One child was delivered at seven and one-half months on account of pre-eclampsia. The baby lived only a few days. There have been two miscarriages. Since her pre-eclampsia in 1919, her blood pressure has been high, usually 180 systolic. On November 29, 1920, she tripped and fell in the backyard, and fainted. She then began to have backache off and on and a little vaginal bleeding. In the afternoon of December 5th, she began to pass clots and was admitted to the Memorial Hospital at 9 P. M. Her pulse was 90 and her color was good. She was three months' pregnant. At 2 A. M., the fetus was lying in the cervix and was removed with placental forceps. The patient became almost pulseless. Systolic pressure was 40. Seven hundred c.c. of normal salt solution were given under the skin. Her color became better and in an hour's time the blood pressure rose to 80. Her convalescence was uneventful and the patient was discharged from the hospital December 11th in good condition. It is interesting to note that in 1931 she had a stroke of apoplexy. She has now a residual paralysis in the left leg and drags the left foot when she walks.

No. 2,161, W., F., M., aet. 23. There is nothing noteworthy in her family history nor in her past history, except that in 1919 she was curetted when three months' pregnant because her doctor thought she was too weak to carry the baby. Physical examination on October 24, 1921, was negative except for a blood pressure of 140/110. On November 1, 1921, one week before term, labor was induced with a No. 5 Voorhees' bag. When the bag was out of the cervix a version and extraction was done. Duration of labor was seven hours and forty minutes. There were no lacerations. Anesthetic consisted of morphine gr. 1/6, hyoscine grs. 3/200, sodium bromide grs. 20, and chloroform for the version. The third stage was uneventful and lasted twenty minutes. After the delivery of the placenta there was a little more than the average amount of bleeding. The patient was put back to bed in good condition, but was slow in reacting. At the end of an hour B. P. was 70/50, pulse 120. Pallor was extreme. Treatment consisted of elevation of the foot of the bed and warm blankets. Recovery was uneventful. The mother and baby were discharged on the thirteenth day in good condition. I delivered this patient June 5, 1923, under morphine, hyoscine and ether anesthesia, and on March 19, 1927, under morphine, bromide, hyoscine, ether-in-oil enema and sacral anesthesia, and on May 2, 1931, I curretted her on account of an incomplete abortion under avertin anesthesia with no complications.

No. 4,797, W., F., M., aet. 28. This was the patient's fifth pregnancy and had lasted five weeks.

About ten days before I saw her she began to pass clots and to have chills and fevers. The fever persisted for several days. On March 14, 1927, nine days after her first bleeding, she began to pass clots. She was seen by her doctor the next day. He prepared to pack her. On introducing a bivalve speculum he saw some membranes protruding from the cervix. He removed them and lightly packed the vagina. The patient immediately went into extreme shock, so that her pulse could not be felt. She was given some adrenalin. Her pulse came back but was very slow. When I saw her in consultation her B. P. was 60/10. She was extremely pale. There was no external bleeding. The patient was brought into the Johnston-Willis Hospital in an ambulance between warm blankets. The hemoglobin was 60 per cent, red cells 3,400,000. B. P. was 105/60. On March 16th, the packing was removed. Red cells were 4,070,000, leucocytes were 14,800 with 60 per cent polymorphonuclear neutrophiles. On March 17th, she had severe cramps when an enema was given. She had two slight fainting spells that day. The patient was discharged from the hospital March 19th much improved. The highest temperature in the hospital was 99.6, the highest pulse rate 115.

No. 6,279, W., F., S., aet. 17, a primipara, was admitted to the Spring Street Home, March, 1929. Physical examination was a negative except for a B. P. of 145/85. With rest and regulation of her diet her blood pressure became normal, but on April 15th it rose to 155/90. The systolic pressure remained above 150 until May 9th, when the membranes ruptured. Blood pressure then was 135/80. She soon began to have almost continuous pains, and was given 1/6 gr. morphine, and 1/200 gr. of hyoscine. When the cervix was nearly fully dilated, fourteen hours after the onset of labor, the patient was given spinal anesthesia with 3/4 gr. of novocaine. The dilatation was completed manually and a version and extraction was done. The delivery was completed at 9 A. M. The estimated loss of blood was 5 ounces. No ergot or pituitrin were used. The patient was put back to bed with a B. P. of 120/80 and a pulse of 98. The baby weighed 7 lbs. 3 ozs. At 10:30 A. M., pulse was 130 and the patient was fairly comfortable. At 11 A. M., the pulse was 140 and the patient was cold and clammy. At 11:30 A. M., the nurse was unable to feel her pulse. At noon the patient vomited a large quantity of greenish fluid. B. P. was 60/?. She then began to flow freely. The nurse had already elevated the foot of the bed and applied hot water bottles. She was given gynergen, ephedrin and adrenalin and a proctoclysis of glucose solution. At 1 P. M., B. P. was 80/55 and the pulse was 135. During the night the patient was restless and talked incoherently. At 8 A. M., B. P. was 95/80. From this time the puerperium was uneventful.

No. 6,299, W., F., M., aet. 20. This patient, a primipara, was seen in consultation. Her labor lasted twelve hours. Twenty minutes before a spontaneous delivery she was given 5 minims of pituitrin. She had 1½ grs. of luminal in the first stage and ether at the delivery. There was no unusual loss of blood. The baby was born at 6 A. M. At 6:45 A. M., it was noted that the patient was very white and complained of being tired. The pulse was slow and very weak. B. P. was not taken. At 7 A. M. she had more color and her pulse was more easily felt. At 7:30 A. M., she bled freely and was given gynergen and hot coffee. At 8:30 A. M., she was feeling better, and an hour later she was in a profuse sweat. Her recovery was uneventful except that her temperature reached 100.4 on the second, third, fourth, and fifth days. She was discharged on the eighth day in good condition.

No. 7,465, W., F., M., aet. 24, primipara, consulted me April 15, 1930, just after she had missed her second period. She gave the history of having inflammatory rheumatism when twelve years of age with some heart involvement and there was still a marked systolic thrill at the apex. Her pelvis was normal. The uterus was soft and retroverted. The pregnancy continued in a perfectly normal manner. She entered the Johnston-Willis Hospital in labor September 23, 1930. The patient slept most of the night. The next morning when the cervix was nearly dilated she was given avertin (1 gr. per kilo.) and when the head was on the perineum it was lifted out with the forceps. A little ether was given at that time. The total anesthetic medication was sodium bromide grs. 10, chloral hydrate grs. 10, morphine grs. ½, hyoscine grs. 1/100, avertin, and ether. A median episiotomy was repaired with three longitudinal sutures of silk worm gut. The patient lost about 5 ounces of blood in the third stage. The total duration of labor was twenty-one

hours and thirty-seven minutes. She was put back to bed in good condition with a B. P. of 94/40. One hour and a half after delivery she went into shock. The pulse could not be felt. She responded quickly to elevation of the foot of the bed, and by the time that I could get back to the hospital she was in good condition. On the third day of the puerperium her temperature rose to 103 and her pulse to 130. The temperature gradually subsided to normal on the sixth day and remained so. Her pulse, however, remained above 100 until the day before her discharge on the eleventh day. The patient has subsequently gone through an uncomplicated labor.

No. 7,585, W., F., M., aet. 30, primipara. She consulted me July 11, 1930. She had pneumonia in 1925 and an appendectomy in 1918. Since two years of age she had been a great sufferer from asthma. Her attacks come on in the spring or when her husband's clothes smell of ether or tobacco. The patient had a miserable time during her pregnancy with faintness and nausea. The blood pressure ranged from 120 to 130 systolic and 70 to 80 diastolic. On November 29th, the B. P. rose to 149/90. Her bowels were loose and she complained of her usual nausea. The urine was free from albumen. On December 15th, B. P. was 140/90, and on December 22nd it was practically the same. On December 29th, B. P. was 150/100. She was having abdominal cramps every seven minutes. The urine was negative. On January 12, 1931, B. P. was 145/90. The patient was very uncomfortable. The cervix was effaced but not dilated. On January 17th, the patient was so uncomfortable that it was decided to induce labor. A No. 5 Voorhees' bag was introduced into the cervix under light ethylene anesthesia. The dilatation was rather slow, requiring twenty-eight hours and fifty-four minutes. During this time the patient was given 1/6 gr. of morphine, 3/200 gr. of hyoscine, 15 grs. of sodium bromide, and 15 grs. of chloral hydrate and avertin (1 gr. per kilo.). She was delivered by version and extraction under chloroform anesthesia. There were about 14 ounces of blood lost. One c.c. of pituitrin was given after the placenta was delivered. The baby measured 22.14 inches and weighed 7 lbs. 6¾ ozs. The patient was put back to bed in good condition with a B. P. of 112/78. When she awoke from her anesthetic she had an expression of abject terror. She was very restless and could not be kept still. One and a half hours after delivery the patient was cold and shivering. There was a little more than the normal amount of flow, and she was given ½ c.c. of pituitrin and a hypodermoclysis of 17 ounces of saline with 16 minims of pituitrin was started. The foot of the bed was elevated. The pulse could not be counted. Respirations were 45 per minute. An attempt was made to give glucose solution intravenously, but we could not get into a vein with a needle, and before we could cut down upon a vein and get a canula in, the patient died, three and half hours after delivery.

No. 8,045, W., F., M., aet. 23 years, primipara. She was first seen March 6, 1931, when four months' pregnant. She was recovering from a severe hyperemesis. Physical examination was negative except for a funnel pelvis; the bi-ischial diameter measuring three inches and the pubic arch 62°. The pregnancy from this time on was normal. There was a gain of 20½ lbs. in weight. The urine remained negative, and the B. P. ranged from 105/55 to 120/70. On June 30th she entered the Johnston-Willis Hospital in labor. She was given 1/6 gr. of morphine and 1/200 gr. of hyoscine and 1 grain of avertin per kilo. The patient went to sleep under this medication. When she awoke the head was out of the cervix in R. O. A. position. Under ether anesthesia forceps were applied and a slow extraction was done. A right medio-lateral episiotomy was repaired with three longitudinal sutures of silk worm gut. The estimated loss of blood was 14 ounces. The patient was put back to bed in apparently good condition. B. P., however, was 60/40. It was taken at ½ hour intervals as follows: 50/40; 78/40; 50/40; 80/40; 82/40; 70/48; 84/56; 96/52. There was no external bleeding. The treatment consisted of elevation of the foot of the bed and hypodermoclysis. The puerperium was uneventful. On July 29, 1931, the post-partum examination was normal. On June 29, 1932, she returned for a routine physical examination, which was normal. B. P. was 120/70.

No. 8,724, W., F., M., aet. 36. This patient has had twelve children and one abortion. Her eighth delivery was a forceps operation; her ninth pregnancy was terminated on account of lung trouble. Her tenth and eleven pregnancies ended in breech

extractions. Her twelfth delivery was under my care at the Sheltering Arms Hospital and was also a breech case. My post-partum notes on July 16, 1931, show the patient to be weak and nervous and suffering from constant headache; B. P. 175/100. She was apparently not giving enough milk for the baby. The patient consulted me in her thirteenth pregnancy May 29, 1932. She had at that time an accentuated second pulmonic sound and a blood pressure of 160/95. She had first felt fetal movements December 20th. The cervix was three fingers dilated. I sent her into the Sheltering Arms Hospital and ruptured the membranes at 7:45 P. M. Pains began at 9 P. M. The breech presented. At 9:54 P. M. dilatation was complete. Under ether anesthesia I disengaged the frank breech and brought down both feet and did an easy extraction. There was no new laceration, and no unusual loss of blood. After the patient was put back to bed she went into moderate shock, but recovered promptly when the foot of the bed was elevated.

On June 5, 1933, the patient entered the Sheltering Arms Hospital for a threatened abortion. On June 8th she began to flow profusely and went into shock. B. P. was 70/30, color ashy, skin moist and clammy and epigastric pain. She was given 17 ounces of saline with 16 minums of pituitrin in it by hypodermoclysis. After one and half hours the patient looked much better. She was taken to the operating room and some placental tissue removed with sponge forceps and the uterus was lightly curetted. The patient left the hospital July 15th in good condition except for pallor.

No. 8,759, W., F., M., aet. 35, III-para, seen in consultation June 7, 1932. The patient had had a spontaneous delivery under ether anesthesia after a labor of four hours and fifty minutes. There was a first degree laceration. Estimated loss of blood was 10 ounces. After she was put back to bed she went into shock. Her systolic pressure went below 90. Her color was ashen and she began to flow rather freely. The foot of the bed was elevated and 1/30 gr. of strychnine was given. Her color promptly began to improve, B. P. rose to 124/75 and the flow checked. Puerperium was normal.

No. 8,928, W., F., M., aet. 31, was seen in consultation October 6, 1932. Her story was that she was about two months pregnant. She had four children and previous abortion. She had had a woman inject some water into her uterus several times. The last time was on October 4th. On October 6th she began to bleed a little but had no pains. She was seen by her doctor who found about a quart of blood and urine in a vessel. He was unable to say how much was blood and how much was urine, but thought that most of it was urine. Shortly after his visit the patient became faint. He again saw the patient and found her in shock. I saw her about one-half hour later. The foot of the bed was elevated. The patient was apparently bloodless. There was no external bleeding. Pulse was slow and thready. B. P. 62/40. The patient complained of no pain. The hot water bottles, blankets and elevation of the foot of the bed were continued. The patient was given 1/20 gr. of strychnine every three hours. She slowly revived and in ten hours she was definitely out of shock.

No. 9,024, W., F., M., aet. 36, primipara, consulted me November 2, 1932, when she was two months pregnant. Twelve years previously she had a D. and C. and radium for dysmenorrhoea. Otherwise her history is unimportant. Her pelvis was normal. B. P. 120/80. Urine showed a trace of sugar. Except for considerable nausea, her pregnancy was uneventful. No sugar was found in the urine after her first visit. On May 13, 1933, she entered the Johnston-Willis Hospital because her membranes had ruptured. Pains started two hours later. When the head was on the perineum and had rotated anteriorly, I did a low forceps operation after a lateral episiotomy. Duration of labor was six hours and five minutes. Anesthetic consisted of sodium amytal 12 grs., hyoscine 1/100 gr., and light ether. Estimated loss of blood was 7 ounces. When she was put back to bed it was noticed that she was limp and pale. B. P. was 100/70. (It was 135/85 on admission to the hospital.) She became very restless and bled perhaps 7 ounces. B. P. dropped to 70. Pulse and respiration were rapid. Treatment consisted of elevation of the foot of the bed, hypodermoclysis with normal salt solution and pituitrin, and 1/30 gr. of strychnine, hypodermically. Recovery was prompt. Puerperium was normal and the patient left the hospital on the eleventh day in excellent condition.

No. 9,872, W., F., M., aet. 39. Patient consulted me January 17, 1934, early in her sixth preg-

nancy. Her fourth pregnancy ended in a miscarriage at six months due to a severe toxemia. Examination showed a soft anteflexed uterus the size of a two months pregnancy. She was quite miserable, slept poorly, and was extremely nauseated. In spite of home treatment consisting of rest and sedatives per rectum, she continued to vomit. On March 12th she was vomiting blood. Her urine was normal. B. P. was 130/80. Nevertheless, she looked badly and it was decided to interrupt her pregnancy. Six drams of Leunbach's paste were injected into the uterus at 11 A. M. She began to have pains at 11 P. M., and towards morning she began to bleed rather freely and entered the hospital at 5 A. M. B. P. was 105/70. There was no bleeding after admission, but her pains continued. She was given 1/3 gr. of morphine, 1/100 gr. of hyoscine, and ether-in-oil enema. At 8:30 A. M. she woke up from the rectal ether in shock. B. P. could not be taken nor could her pulse be felt. She complained bitterly of abdominal pain. She was given 32 ounces of 5 per cent glucose solution intravenously, strychnine 1/30 gr., and a hypodermoclysis with normal salt solution was started. The patient soon went back to sleep and the pulse returned at the wrist. At noon a mass was seen at the vulva and was expressed by pressure upon the uterus. This consisted of a female fetus 15 cm. long, and a rolled up placenta. About 10:30 P. M. the patient began to have an almost continuous diarrhoea and at 11:30 P. M. she again went into shock. Her pulse could not be felt. There was no bleeding. She was given 1/30 gr. of strychnine and 4 grs. of caffeine sodium benzoate. She recovered promptly and was discharged in good condition on the fifth day.

No. 10,263, W., F., S., aet. 25, II-para, was admitted to Brookfield December 8, 1933. Physical examination was negative except for an old laceration of the perineum. On January 1st, B. P. rose to 155/90. The diet was restricted and she was given Epsom salts. On January 8th, B. P. was 115/80, but on the fifteenth it was 145/100. She was again purged with Epsom salts. On January 22nd and 29th, B. P. was 135/80. She was given 1½ ozs. of castor oil and 5 grs. of quinine. Her membranes ruptured spontaneously one and one-half hours later and she began having pains. She was given 7 grs. of sodium alurate. When the cervix was fully dilated, 3/4 grain of novocaine dissolved in spinal fluid was given intrathecally. By this time the head presented at the vulva in L. O. A. position and was lifted out with the forceps. A small first degree laceration was repaired. The placenta was delivered seven minutes later. Estimated loss of blood was 5 ounces. Total duration of labor was two hours and twenty-seven minutes. The baby, a male, weighed 6¼ lbs. The placenta contained six large infarcts. The patient was put back to bed in good condition with a B. P. of 155/100. An hour and thirty-three minutes after delivery the patient complained of abdominal pain and went into shock. The nurse was unable to feel the radial pulse for thirty minutes. She elevated the foot of the bed. I saw the patient fifty minutes after she went into shock. B. P. was then 100/85. Her color, or rather lack of color, had a greenish tinge. The uterus was firm and well contracted. There was no external bleeding. The abdomen was sunken and not tender. She was given 1/30 gr. of strychnine every hour for three hours. At the end of that time she was nauseated, but her blood pressure was rising. The puerperium was uneventful.

No. 10,301, W., F., M., aet. 40, consulted me August 2, 1934. She had five children, two of which were twins. There had been no miscarriages. At the birth of her twins she had puerperal fever and was in bed a month. I delivered her of her fourth child October 15, 1923, and her fifth June 3, 1927. These births were uncomplicated. At her post-partum examination July 6, 1927, it was noted that she had sibilant rales over the upper right back, that the liver was moderately enlarged, and that her B. P. was 130/90. When she consulted me August 2, 1934, her B. P. was 150/95, the cervix was two fingers dilated, and the fetus was in R. O. P. position. She was sent to the Johnston-Willis Hospital and was given 1 oz. castor oil and 5 grs. of quinine. The membranes were ruptured at 3:14 P. M. When the head was out of the cervix and had rotated anteriorly, forceps were slipped on and an easy extraction was done. There was no laceration. Total duration of labor was two hours and twenty-six minutes. Estimated loss of blood was 7 ounces. Her blood pressure after she was put back to bed was 110/80. One hour and a half later her blood pressure dropped to 90 systolic. She was pale and began to bleed rather freely. The

foot of the bed was elevated and she was given 1/30 gr. of strychnine. Fifteen minutes later the systolic pressure was 120 and there was no further bleeding. Her recovery was uneventful.

CASE NO.	AGE	CH.	ABS.	WASS.	B. P.	OPERATION	DURATION	ANESTHETIC	REMARKS	DIATHESIS
1776	40	5	2	0	.....	Incomplete abortion.	.....	None	.....	Stout, Apoplectic
2161	23	0	1	0	140/110	Bag and version.....	8	Morph. Hyos. NaBr. Chloroform.....	.....	Frail
4797	28	4	0	.....	.....	Incomplete abortion.	.....	None.		
6279	17	0	0	0	155/90	Dry labor, manual dilatation, version.	14	Morph. Hyos. Spinal.		
6299	20	....	0	0	.....	Pituitrin and spontaneous	12	Luminal, Ether.		
7465	24	0	0	0	120/80	Low forceps.....	22	B and C, Hyos. Avertin Ether.....	.....	Rheumatic.
7585f	30	0	0	0	150/100	Bag and version.....	28	Morph. Hyos. Avertin Chlor.....	Hyperemesis..	Asthmatic.
8045	23	0	0	0	120/70	Low forceps.....	10	Morph. Hyos. Avertin Ether.....	Hyperemesis.	
8724	36	12	1	0	160/95	Rupture membranes, Breech extraction.	2	Ether.....	.....	Nephritic.
8759	35	2	0	.....	.....	Spontaneous.....	5	Ether.		
8928	31	4	1	.....	.....	Abortion.....	.....	None.		
9024	36	0	0	0	135/85	Dry labor, low forceps.....	6	Sodium amytal, Hyos. Ether.	Hyperemesis..	Frail.
9872	39	4	1	0	130/80	Leunbach paste.....	.....	Morph. Hyos. Ether-enema.....	Hyperemesis Diarrhoea.	Frail.
10263	25	1	0	0	155/90	Dry labor, low forceps	2	Sodium alurate, Spinal.		
10301	40	5	0	0	150/95	Rupture membranes, Low forceps.....	2	Sodium amytal, Hyos. Ether.		

DISCUSSION

All my patients were white women. Their ages varied from seventeen years to forty years, the average being 29.8. Two were unmarried. Seven were primiparae if you count one who had had a previous therapeutic curettement at two months as a primipara. One had one child, one had two children, three had four children, two had five, and one had twelve. All patients except those seen in consultation had negative Wassermann reactions. The blood pressure in the majority was somewhat above normal, but in none was it extremely high. Albuminuria was usually absent. The kind of delivery was various. Four cases were abortions, and eleven was full-term deliveries. One of the abortions was induced by injecting Leunbach's paste, one was caused by a fall, and two were induced by abortionists. Of the full-term deliveries, five were dry labors, including two cases in which labor was induced by rupturing the membranes. One delivery was unaided, one was spontaneous plus pituitrin. There were five low forceps operations, one breech extraction and three versions and extractions. One of the versions was preceded by completing the dilatation manually, and two were preceded by Voorhees' bags. The anesthetic varied as much as the operations. Three patients had no anesthetic. Two had only ether. One had ether preceded by luminal; one ether preceded by bromide, chloral, and avertin; one ether preceded by morphine, hyoscine, and avertin; one ether preceded by morphine and hyoscine alone, and another by sodium amytal and hyoscine. Two had chloroform anesthesia preceded by morphine, hyoscine, and sodium bromide, in one, and by morphine, hyoscine and avertin in the other. There were two spinal anesthesias. Three-fourths of a grain of novocaine was used in each. In one the spinal puncture was preceded by morphine and hyoscine, and in the other by sodium alurate.

Three patients had pronounced hyperemesis in early pregnancy. One had diarrhoea after the shock. It is interesting to note that I have in the hospital now a patient who had shock from ablatio placentae and severe hemorrhage, who had a severe diarrhoea for thirty-six hours afterwards. In looking back over these cases, I am impressed by the number that

complained of abdominal pain and restlessness, although the notes do not always mention it.

Polak, in discussing Randall's paper, said that his worse cases of shock without hemorrhage occurred in blue-eyed doctor's wives. Two of my patients were doctor's wives, but I do not believe that their eyes were blue. Two patients were frail and asthenic, and one was stout and of an apoplectic diathesis. She later had a cerebral accident. One patient was nephritic, and one had had rheumatism and heart disease. One patient, the only fatal case, had severe asthma. Unfortunately, there was no autopsy, and so it is possible that she does not belong in this group.

These fifteen cases of shock severe enough to cause alarm, and in which hemorrhage did not seem to play an etiological role, occurred in 7,177 cases of abortions and full-term labors of which I have notes. This would make the incidence slightly more than 0.2 per cent. In fourteen of my cases recovery rules out ruptured viscera and other severe abdominal lesions that are found so often in cases of so-called obstetrical shock that come to autopsy.

A great many causes have been advanced to account for obstetrical shock: bruised tissue, chemical changes in extravasated blood, sudden release of abdominal tension, a combination of fear and anxiety with pain leading to a state of mental and physical exhaustion and eventually to shock, presence of an anesthetic, degeneration of the liver, loss of body fluids, and acidosis. Many of these "causes" are present in every labor, and, if they be true causes, the difficulty arises in explaining the *infrequency* of obstetrical shock.

In this connection, Dr. Byrd,[12] a former interne at the Johnston-Willis Hospital, is reporting a very interesting case. His case was that of shock with, in addition, a generalized urticaria and edema of the face that came on just after a post-partum injection of pituitrin. The patient was later given an intra-dermal test, and re-acted with a solution of 1-100 of pituitrin.

There is one possible cause that I have not seen advanced, and that is the spill of blood or fluid into the peritoneal cavity through the fallopian tubes. Goodall has shown that occasionally the tubes are preternaturally patent, and it is possible that occasionally fluid that was present in the uterus might regurgitate into the peritoneal cavity in sufficient quantity to cause shock. The fact that in three of my cases fluid had been injected into the uterus lends color to this idea.

Under the head of treatment I wish to emphasize the early recognition of the condition. In some of my cases at least, the pallor preceded the fall in blood pressure. When, after delivery, the patient is unusually pale or the blood pressure begins to fall, the foot of the bed should be elevated and fluid should be given under the skin. By such treatment, I believe shock may be prevented, or, if it does occur, its duration can be shortened. Theoretically, fluid in the blood vessels is the ideal treatment, and for this purpose a 6 per cent gum acacia solution is highly recommended. Of drugs, strychnine has seemed to me to be distinctly worth while.

Conclusions

Shock without obvious cause may occur in 0.2 per cent of labors and abortions.

Patients with unusual pallor after delivery or a falling blood pressure should be treated as though they were in shock in hopes of aborting or shortening an attack.

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Medical Arts Building.

THE SIGNIFICANCE OF THE COOPERATIVE CLINICAL STUDIES IN THE TREATMENT OF SYPHILIS.*

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A study of the various problems which relate to the treatment of syphilis was planned in 1927 by the Health Organization of the League of Nations. Five American clinics† have cooperated in this investigation. Believing that their clinical material provided information on many points not emphasized by the studoy and desiring to extend the investigation to various forms of late as well as early syphilis, the five chief clinicians organized a cooperative clinical group whose function it was to conduct a retrospective inquiry into the results of treatment in the several stages of syphilis. The cooperation of the United States Public Health Service with its coordinating and statistical facilities was enlisted. The cost of these studies was considerable and was borne, first, by a grant obtained from an anonymous donor; later by a large philanthropic organization, and within the past year the United States Public Health Service has assumed the entire burden. Such support has made it possible for the United States to conduct an independent evaluation of the treatment of syphilis in its representative clinics and, in addition, extend the desired cooperation to the League of Nations.

The American study had as its aim the analysis, interpretation, and evaluation of pooled records from the five syphilis clinics. The intention has been to utilize the results of this composite experience to simplify and standardize methods and practice in the treatment of syphilis for the information of the specialist and the guidance of the physician in general practice. Aside from the greater value resulting from the fusion of the records, it has been possible to reflect in these studies the opinion and experience of the participating clinicians.

The accumulated clinical material of these five clinics approximated 75,000 records of patients treated for syphilis. Uniformity of selection of cases has prevailed. The extent of this selection will be stated later in a brief description of the findings from the various studies. Several articles based on these cases have been published. These relate to the treatment of early syphilis, the problem of mucosal and cutaneous relapse, the treatment of latent syphilis, the effects of syphilis in pregnancy, and the reactions of the human body to the arsenical compounds administered in the treatment of this devastating disease. Additional articles are now in process of preparation on the treatment of cardiovascular syphilis. Plans for an analysis of the results of the treatment of syphilis of the central nervous system and also of pre-natal syphilis are under way. With the material available every important aspect of syphilis will be covered.

The primary purpose of this paper, therefore, is to summarize and to present briefly the most important findings which have resulted from the collective studies that have thus far been completed.

EARLY SYPHILIS

The studies in early syphilis give the most hopeful indication for the eradication of syphilis as a community problem. The prevention of the spread of infection by treatment has been reemphasized in the cooperative clinical studies, and a standard plan of therapeutic procedure evolved which insured favorable results.[1]

The need for a system for the appplication of antisyphilitic remedies, which will insure the best results and possibly ultimate cure, has long been felt.

The cooperative clinical studies have demonstrated that the most satisfactory treatment of early syphilis must be *continuous*; it must employ an arsphenamine and bismuth; it must call for not less than

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†The American clinics selected were the Johns Hopkins University Clinic, headed by Dr. Joseph Earle Moore; the Mayo Clinic, by Dr. Paul A. O'Leary; The University of Michigan, by Dr. Udo J. Wile; the University of Pennsylvania, by Dr. John H. Stokes, and the Western Reserve University Clinic, by Dr. H. N. Cole. The cooperation of the U. S. Public Health Service was sought in the administrative management of the studies and for its statistical facilities.

twenty, and unless special resistiveness is encountered, hardly more than 30 injections of the arsphenamine; and the system should call for continued treatment with heavy metal for one year after all symptoms and signs of the disease have disappeared. Blood tests should be taken at least at the beginning and end of each arsphenamine course and the patient should be warned, before treatment is instituted, of the lack of significance of the negative report from the standpoint of the schedule. The

TABLE 1—A SCHEME OF TREATMENT FOR EARLY SYPHILIS*

Day or week	Arsphenamine	Interim treatment	Blood Wassermann reaction	Remarks
Day				
1	0.3-0.6	----------	1	Arsphenamine dosage for first 3 injections at level of 0.1 gram for each 25 pounds body weight. Average subsequent dosage, 0.4 gram, men, 0.3 gram, women. In average patient all lesions heal rapidly and blood Wassermann reaction becomes negative during first course. If arsphenamine cannot be used, substitute 8 to 10 doses 0.3 gram silver arsphenamine, or 10 to 12 doses 0.6 gram neoarsphenamine. This applies also to subsequent courses.
5	.3-0.6			
10	.3-0.6			
Week				
3	.4			
4	.4			
5	.4			
6	.4			
7	.4	----------	1	If mercury is used, note overlap of 1 week at end of first and start of second arsphenamine courses. At this point a few days without treatment may be dangerous. Neurorecurrence.
8	----------	Bismuth, 4 doses, 0.2 gram and K. I., or Ung. Hg. and K. I.		
9				
10				
11				
12	.4	----------	1	Arsphenamine starts, bismuth stops. Watch for provocative Wassermann reaction after first dose of arsphenamine.
13	.4	----------	1	
14	.4	----------	----------	Try to prevent short lapses in treatment, especially at this early stage.
15	.4			
16	.4			
17	.4	----------	1	
18-23	----------	Bismuth, 6 doses, or Ung. Hg. and K. I.	----------	Bismuth is better than mercury. Use it if possible. Examine cerebrospinal fluid if patient's cooperation can be secured at about this time.
24	.4			
25	.4			
26	.4			
27	.4			
28	.4			
29	.4			
30-37	----------	Bismuth, 8 doses, or Hg. and K. I.	----------	
38	.4	----------	1	
39	.4			
40	.4			
41	.4			
42	.4			
43	.4	----------	1	Patients with seronegative primary syphilis may cease treatment here, if blood Wassermann reaction has always been negative.
44-53	----------	Bismuth, 10 doses, or Ung. Hg. and K. I.	----------	Note that bismuth or mercury courses are gradually getting longer—4, 6, 8, and now 10 weeks.
54	.4	----------	1	
55	.4	----------	----------	The average seropositive primary or early secondary patient should have at least 5 courses of arsphenamine.
56	.4			
57	.4			
58	.4			
59	.4	----------	1	
60-69	----------	Bismuth, 10 doses, or Ung. Hg. and K. I.	----------	It is safer to finish treatment with bismuth or mercury rather than with arsphenamine.
70-122	Probation	No treatment -------	6-12	Blood Wassermann every month if possible; at least every other month.
123	Complete physical and neurologic examination, spinal puncture, and, if possible, fluoroscopic examination of cardiovascular stripe. Thereafter, yearly physical examinations, blood Wassermann every 6 to 12 months. If the 2 spinal fluid examinations above are negative, this need not be repeated.			

*From Ven. Dis. Inform., Apr., 1934, 15: 159.

reappearance of weak positives, after negative reactions have appeared, should be taken as seriously as strong or fully relapsing positives. A spinal fluid examination, including serologic tests for syphilis, cell count, protein estimation, and colloidal gold test should be made before the end of the arsphenamine phase of treatment, or before the introduction of any rest period (none should be allowed until after the first year). It is understood that such a system can be carried through only with adequate tolerance on the part of the patient, and this tolerance should be conserved in every possible way. The same system should be employed whether treatment is begun in the sero-negative or sero-positive primary stage, or in the secondary stage.

An analysis was made of 3,244 cases of early syphilis under observation for a period of six months or more.[2] It was found that eight out of every ten of these patients who had a communicable form of relapse had received less than fifteen doses of arsphenamine with the accompanying heavy metal. Thirty-five per cent of such relapsed patients had received less than five doses of arsphenamine. Additional factors demonstrated that the critical time for treatment of the syphilitic patient was in the first two years of the disease. During the first six months after treatment ceases, 45 per cent of the infectious relapses had occurred; by the end of the first year, 73.6 per cent; and by the end of the second year, 91 per cent.

Authorities have divergent opinions as to the time during the early syphilitic infection when treatment should be started. The development of a generalized immunity to the Spirochaeta pallida in the secondary stage is well known. Some workers believe that treatment should not be commenced until an opportunity has been given to the patient for the development of this immunity. In other words, when a patient presents himself in the primary stage, especially after a positive serologic blood test has developed, the attending physician gives no immediate treatment but waits for the secondary stage.

A study of the stage of the disease at which the patient began treatment yet subsequently developed an infectious relapse presented a possible solution of this question. It was found that among the sero-negative primary cases 16 per cent showed evidence of infectious relapses, 20 per cent among the sero-positive primary cases, and 9.5 per cent among those patients who began their treatment in the secondary stage of syphilis. It is especially to be noted, however, that the patients who began treatment in the secondary stage of the disease had already passed through a communicable period in the chronology of the disease (the primary stage). During their primary stage 100 per cent of the cases had already been infectious. The final incidence of communicability for those beginning treatment in the secondary stage may, therefore, be set at 109.5 per cent (100 per cent plus 9.5 per cent), and appears to be of much more significance than the relapses in those patients beginning treatment in the primary stage with negative or positive serologic blood reactions.

The significance of changes in the serologic reaction of the blood in syphilis has long been under investigation by both syphilologists and serologists. In the cooperative clinical studies the failure of the blood serologic reaction to reverse usually manifested itself in the coexistence of communicable relapse in a higher percentage than when the reaction reversed. Under continuous treatment only 2.5 per cent of the patients whose serologic reactions became negative within the first year of the disease developed a muco-cutaneous relapse. This compared with 6.7 per cent of those similarly treated whose reaction failed to reverse within the first year. A similar phenomenon was noted with each of the other types of treatment; intermittent 8.2 per cent and 15.9 per cent; irregular 12.8 per cent and 42.2 per cent.

It was established that the failure of serologic tests of the blood to reverse was more a matter of how treatment was given than of how much. The regular administration of arsphenamine and heavy metal, especially in the first three months of the disease, caused the greatest number of serologic reversals; even a little treatment given continuously was found to be more than twice as effective as when it was given intermittently.

How long and in what manner should treatment be given in order to attain best results from the standpoint of the patient? For the prevention of the late and crippling manifestations of syphilis the advantage of adequate treatment, that is more than twenty doses of arsphenamine, as compared with inadequate treatment, is evident. There were three times as many individuals who developed some type of central nervous system involvement among those who had received less than twenty doses of arsphe-

namine with its accompanying heavy metal than among those receiving more than this amount. The effectiveness of treatment was not noted to the same extent in syphilis of the heart and blood vessels—0.9 per cent adequately and 1.2 per cent inadequately treated. There appeared to be no indication that the stage of early syphilis at which the patient began treatment tended to influence the development of a cardiovascular or central nervous system involvement.

An effort was made to determine the probability of progression after the patient had remained under treatment for a two-year period or more. For this reason the discussion of early syphilis will subsequently be limited to the end-results in such cases. It was found that with a continuous scheme of treatment in which an arsphenamine with accompanying heavy metal was used, if the patient began treatment in the sero-negative primary stage, 86.4 per cent satisfactory results* were attained. But when the same scheme of treatment was used in the early secondary stage, the good results dropped slightly to 81.5 per cent. It is of interest to note that the most effective scheme of treatment in the sero-positive primary stage was an intermittent scheme (64 per cent satisfactory results by continuous and 70 per cent by intermittent treatment). This may have been due to the fact that these patients gained an immunity in the interim when no treatment was given. Such a hypothesis would coincide with the theory of the development of immunity when treatment is not given until the secondary stage has been reached. In any event, it is important to note that the occurrence of communicable manifestations of syphilis is obviated in the sero-positive primary stage by the intermittent system.

From these data it would at first seem advantageous to the patient to delay treatment until he arrives at the early secondary stage. When all types of relapse are reviewed, however, it is found that, aside from the increased number of infectious relapses, there is no evidence that beginning treatment at any time in the primary stage predisposes the patient to late and crippling manifestations of syphilis. With persistence in treatment any patient with primary syphilis may expect as satisfactory an outcome as is attained by those individuals who wait until the secondary manifestations of syphilis have developed. From a public health standpoint, the grave epidemiologic consequences of delayed treatment have already been discussed and are obvious. The cooperative clinical group recommend, therefore, that treatment of early syphilis be instituted as soon as possible after the appearance of the chancre.

*"Satisfactory result" implies that the patient has been followed for two years or more and that during one probationary year he has had no symptoms of syphilis, his blood has been consistently negative, he has had a negative physical examination and in almost all instances a negative spinal fluid examination, or he has had a reinfection.

SYPHILIS IN PREGNANCY

The findings having the next greatest public health significance relate to those in which the disease coexisted with pregnancy. The cooperative clinical studies included the records of 3,817 syphilitic women under treatment.[3] Among these, 603 were pregnant during or after antisyphilitic therapy. These 603 women experienced 922 pregnancies and the results of 607 pregnancies were known. They indicate that with early and adequate treatment during pregnancy the prognosis is most favorable for the birth of an infant apparently free from syphilis. Unfortunately, there are as yet no records available relative to the development of syphilis in the child subsequent to birth. When treatment of the syphilitic mother was adequate, that is, consisted of ten or more injections of one of the arsenical compounds and accompanying heavy metals, and the administration was begun before the fifth month of pregnancy, 91 per cent of all children delivered were apparently non-syphilitic. But, if treatment was delayed until after the fifth month, only 62 per cent of the children were born alive and non-syphilitic, although the maximum amount of treatment possible in the remaining gestation period had been given.

Treatment even in a previous pregnancy seemed to influence favorably the outcome of subsequent pregnancies. Thus, if treatment had been given in previous pregnancies and not in the last, an apparently healthy child was delivered in the last pregnancy in almost two-thirds of the women having a negative serologic blood reaction. But if treatment had never been received for syphilis and the blood reaction was negative, only a little more than one-fourth of the women were delivered of apparently non-syphilitic children. The cooperative clinical group, therefore, concludes that the

syphilitic mother should be given early and adequate treatment throughout every pregnancy whether her serologic test for syphilis gives a positive or negative reaction. One of the most encouraging findings in the study was that women, who had previously had two or three abortions and subsequently received antisyphilitic treatment of any kind, were able to bear living children three out of four times.

A point of additional interest was that the pregnant syphilitic woman was demonstrated to be a good risk for arsenical therapy. She tolerated the arsenicals better than the non-pregnant woman. The findings gave evidence that crustaceous dermatitis and icterus were more common in the syphilitic woman never pregnant. Such severe reactions as aplastic anemia, purpura hemorrhagica, and death due to treatment were not reported in the pregnant women undergoing treatment.

Latent Syphilis

The fact that the average latent case of syphilis has passed the second year of the disease, and that syphilis in this stage does not ordinarily occur in a communicable form, makes a consideration of latent syphilis of less significance for the health officer than for the physician in private practice. The possible prevention of the transmission of syphilis by a latent syphilitic pregnant woman to her offspring offers the most important public health aspect of this stage of the disease. The infectiousness of the semen of the latent syphilitic male appears to be relatively of less importance though at the present time the degree of such infectiousness is not certainly known. On the other hand, the studies under consideration[4] offer some encouragement to the patient with latent syphilis, and resulted in the accumulation of information pertaining to the complex problem of treatment which should be of great value to the practicing physician.

The aim of treatment in latent syphilis is to decrease the probability of clinical progression or relapse in comparison with the results attained when no treatment is given, and to increase the probability of arrest. In addition, treatment should be directed toward the control of the potential infectiousness of a latent syphilitic. A rational outline for the treatment of latent syphilis, capable of application to the average patient, is shown in Table 2.

On completion of the treatment the patient should be followed with periodic physical and laboratory examinations annually for the remainder of his life. The application of this treatment method is materially influenced by the patient's age and probable life expectancy.

Table 2—Suggested Outline of Treatment for Latent Syphilis.*

1. Complete and thorough physical examination.
2. Routine test of spinal fluid before starting treatment, or as soon thereafter as possible.
3. If early latency (less than 4 years' duration) use outline of treatment for early syphilis. *Treatment must be continuous.*
4. If late latency:

Weeks	1- 7	8 weekly doses neoarsphenamine 0.45-0.6 gm.
	8-17	8-10 weekly doses bismuth.†
	18-25	8 weekly doses neoarsphenamine.
	26-37	12 weekly doses bismuth.
	38-45	8 weekly doses neoarsphenamine.
	46-57	12 weekly doses bismuth.
	58-69	Rest period.
	70-81	12 weekly doses bismuth.
	82-93	Rest period.
	94-105	12 weekly doses bismuth.

Among those patients with latent syphilis treated for from two to five years, ultimate satisfactory results were attained in 46 per cent; from five to ten years in 60.6 per cent; and, among those patients who were followed for ten years or more, satisfactory results gained the prominence of 85 per cent with only 2.5 per cent of such patients experiencing a clinical relapse. In patients followed for ten or more years it was notable that serologic fastness of the blood to a large extent disappeared.

An estimate by the attending physician as to the frequency with which the patient may develop the late and crippling manifestations of syphilis is a problem of first importance to both these individuals. Of the total group of 1,936 patients, there were ninety-four who experienced some form of relapse—sixteen had an early infectious relapse, thirty-one syphilitic complications involving the heart and blood vessels, and thirty a central nervous system relapse. In five cases there was visceral involvement, usually of the liver. Of the ninety-four patients who had a clinical relapse, an ultimate satisfactory result was subsequently achieved in twenty of them. In only eight of the thirty relapsed cases with central nervous system involvement was enough damage done to cause distressing manifestations. In

*From Modern Treatment of Syphilis, by Joseph Earle Moore. Charles C. Thomas, Baltimore, 1933, p. 246.

†For purposes of this course of therapy, by the word bismuth is understood a bismuth preparation, either liposoluble or an oil suspension, that is capable of furnishing at least 80 to 100 mg. of metallic bismuth at a weekly dose.

only seven of the thirty-one cases with a relapse involving the heart and blood vessels did the condition develop into an incapacitating one during the period covered. Clinical relapse was found to be only slightly more frequent in patients with persistently positive blood reactions than in patients whose reactions had become negative. The latent syphilitic patient, therefore, is in no special danger because of the persistence of a positive blood reaction. On the other hand, the occurrence of serologic relapse of the blood frequently was demonstrated to be an unfavorable omen. The repeated occurrence of one plus or two plus reactions interspersed with groups of negatives, when the tests were frequently performed, was proven to be an especially unfavorable sign pointing to ultimate complete relapse.

All except three of the patients who had an infectious relapse began treatment in early latency, that is, syphilis of less than four years duration. Three-fourths of the cases having a relapse of any kind received less than twenty doses of arsphenamine in combination with heavy metal.

But, again, it was found that syphilis of the heart and blood vessels was not apparently affected by an increased amount of arsphenamine.

Reactions to the Arsenic Compounds

The considerable number of records accumulated made it possible to study severe reactions to the arsenicals on a large and comprehensive scale. Such reactions are of vital importance in the program for the eradication of syphilis. It is a well-known fact that these reactions and the pain associated with intravenous and intramuscular injections cause great aversion to antisyphilitic therapy in the less phlegmatic patients, and, indirectly, lapses from treatment. The study of the cooperative clinical group on arsenical reactions included a consideration of 177,360 injections. Among this number two severe reactions and thirteen mild reactions occurred per 1,000 injections. The severe reactions in their order of frequency were icterus, crustaceous dermatitis, ocular damage (found exclusively among 19,964 injections of tryparsamide), purpura hemorrhagica, and in a few instances arsenical stomatitis, aplastic anemia, hepatitis, and encephalitis.

Arsphenamine (606) and neoarsphenamine showed an equally low toxicity. Sulpharsphenamine was about 50 per cent more toxic than arsphenamine and neoarsphenamine. Although mild reactions after sulpharsphenamine were less frequent, the number of severe reactions from this drug indicated that it was the cause of much more serious damage than either arsphenamine or neoarsphenamine. Silver arsphenamine was less toxic than arsphenamine and neoarsphenamine but it was also less effective in producing satisfactory end-results. Reactions of either a mild or severe type occurred with greatest frequency during the first course of treatment. Severe reactions, especially crustaceous dermatitis and icterus, were more common among patients in the advanced age groups, while the mild reactions occurred more frequently in the early years of life.

Three-fourths of the patients in whom arsenical treatment was resumed after the first reaction experienced no further difficulty. The best measures found for the prevention of reactions were, in order of success, the postponement of arsenical treatment for at least one month and preferably for from three to six months, changing the variety of the arsenical drug, and finally lowering the dose.

The Results and Their Application

The findings made by the cooperative clinical group should, when applied, assume an important place in the solution of the syphilis problem. Under present medical organization in the United States the practicing physician holds the most prominent position in the program for the ultimate eradication of syphilis. The results of these studies have been well distributed among the members of the medical profession. The widespread prevalence of syphilis and the large number of cases in any community make it economically impossible for health organizations with present appropriations to give the consideration to the problem which is commensurate with its size.

The studies are not only of interest to the physician engaged in private practice. They are likewise of inestimable value to the health officer in whose hands is placed informative material for physicians regarding the most modern and authoritative procedures in syphilis therapy. Indeed, if all of the information uncovered were applied, the syphilis problem would soon be solved. Impediments in the way of the application of the findings are those which so frequently interfere with measures directed against this disease. Foremost among these are the high costs of an intelligent pro-

gram against syphilis, rendering present penuriously financed measures ineffective, and the indifference with which the average infected person regards the disease. To a more limited degree may also be included the neglect of many physicians to keep well informed on the subject and to adopt new methods, the apathetic and disinterested regard of the problem by most health officers, and the opprobrium and disrepute for people who contract syphilis, fortunately now somewhat decreasing but formerly strongly entrenched in the public mind.

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CARCINOGENESIS—A LINE OF RESEARCH. SECOND PAPER.
The Role of the Lymphatic System in Its Relation to Karyokinesis.*

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In a recent paper by one of us,[1] the various factors contributing to carcinogenesis were discussed and a general theory outlined. The results of electromotive force measurements on salt solutions of radioactive and non-radioactive electrolytes, reported in the same paper, led us to believe that a Helmholtz double layer. formed at the surface of the electrodes, was responsible for the galvanometric deflections produced. These potentials applied to the cell, as has been shown by Abramson,[2] are important factors in health and disease.

In the present paper we are concerned with the importance of the lymphatic circulation; particularly in regard to the part it plays in cellular stability, normal regenerative processes, as well as in cellular hyperplasia.

RADIATION THEORY OF CELLULAR DIVISION

We believe the stimulus to cellular division is due to weak radiations of low energy density from the element potassium or, more exactly, its isotope K_{41}. It has been shown by means of the mass spectrograph that two isotopes of potassium exist.[3] The quantity of isotope K_{41} in potassium from all sources has been found to be 4.8 per cent. Biltz Ziegart and others[4] have shown that the radioactivity is present in isotope K_{41}. This has been shown by measuring radiations before and after concentration of the 41 isotope, the increased radiation corresponding almost exactly with the increase in the afore-mentioned isotope. The type of radiation emitted by potassium is that due to beta rays,[5] which are, of course, accompanied by Gamma rays. These gamma rays have been found to be stronger than those from radium C.[6] Aston[7] has recently examined the radioactive disintegration of potassium and has failed to find any trace of calcium, which would be normally expected of an element having atomic number 19 undergoing this type of disintegration. This means, therefore, that while the radioactive properties of potassium have been amply demonstrated, the position of potassium in the radioactive series of elements has still to be explained.

Of all the elements which enter the body in appreciable amounts, potassium is the only one known to be radioactive. It is our contention that this radioactive element is essential for the life processes of a cell. The life in a cell may be visioned as a delicately balanced equilibrium between highly complex molecules tending to break down into inert substances, and radiation of the proper wave length and density.

Radiation + Inert colloidal complexes = Living matter.

*Read before the New York Alumni Association of the Medical College of Virginia, November 2, 1934, with demonstration of methods of research.

There is a very narrow range or wave band of radiation as well as a sharply defined radiation density which is necessary to sustain cellular life. Beyond this it is impossible to go without producing death on the one hand or cellular division on the other. The idea is represented in Fig. 1. An

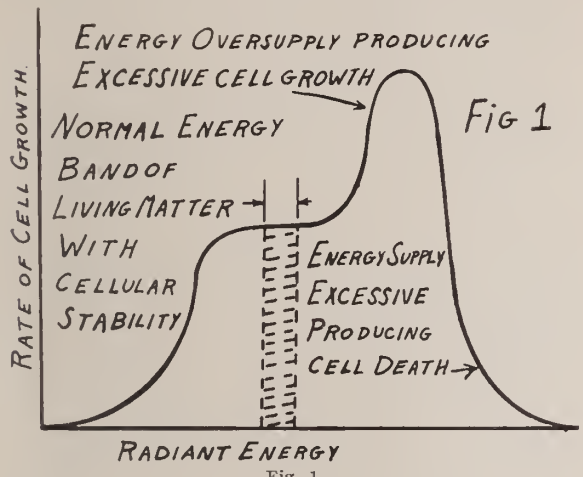

Fig. 1.

increase in the concentration of the radioactive isotope of potassium will, in terms of our theory, be mainly responsible for cellular division, because the radiant energy content or density has risen above that which is necessary for its environmental function as a cell unit. The question might well be asked: How does this increase in potassium arise?

The Conditioning Effect of Tissue Fluids on Cell Structure

Every cell will tend to reach a state of equilibrium with respect to the media in which it is immersed. According to Howell, "All the tissue elements, in fact, may be regarded as being bathed in lymph."[8] Cells, therefore, through osmosis and cellular selectivity, tend to adjust themselves to their lymph environment. The selectivity of cells has recently been demonstrated in regard to the isotopes of hydrogen in vegetable tissues, where fractionation has been shown to take place.[9]

Let us consider a simple tissue injury and its subsequent regeneration. There is first an increase in the flow of blood to the injured part with a corresponding increase in the lymph output. The lymph carries the products of injury, i. e., cellular debris, foreign matter, infecting organisms, etc., to the neighboring glands. These glands are stimulated to produce a tissue repair hormone which reaches the injured tissue by way of the blood stream. This hormone serves to condition the cell with respect to its selectivity for K_{41}, which we have shown to be so necessary for the maintenance of growth and function. The completion of the regenerative process brings to an end the stimulation of the lymph gland with regard to its hormone secretion as the cellular stability of the part is reestablished.

This theory of lymph function may be at variance with the views of the older physiologists, and more recently with those of MacLeod and others, who picture it as being purely scavenger.[10] A study of the schematic diagram of lymph and general

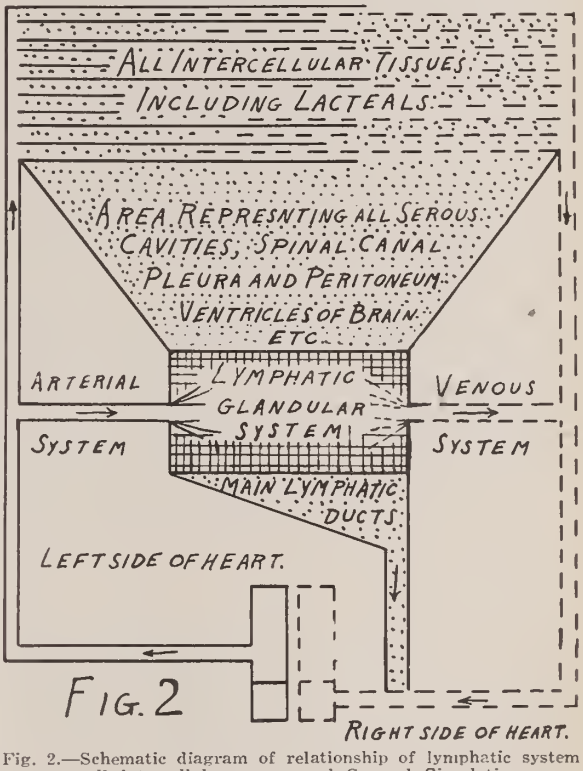

Fig. 2.—Schematic diagram of relationship of lymphatic system to all intercellular spaces and General Circulation.

circulatory system, according to our interpretation, as here presented, Fig. 2, will show:

1. The relationship of the blood circulation in all intercellular spaces to the lymph system.

2. The relationship of all lymph spaces and serous cavities, as well as all ductless glands, to the lymphatic system.

3. The relationship of all afferent lymph channels to the lymphatic glandular system and the final termination into the venous system.

A simple tissue injury may, therefore, be looked upon as a process involving, in a cycle, the injured tissue with its nearest lymphatic gland. The num-

ber of lymph glands, local or generalized throughout the body, which become involved, depends upon the extent of the injury and its chronicity. Where the lymph gland system is inadequate to meet the regenerative process, and the factors of irritation of the parts persist, a hyperactivity of the pituitary gland and possibly other ductless glands, having a correlative function, is called into play.

Evidence is accumulating in the support of the presence of a growth stimulating hormone which Burrows and Johnston have termed Archusia.[11] This we believe to be the lymph gland hormone consisting of a complex molecule containing the basic elements potassium and calcium. Its function is stimulating on the one hand and organizing or inhibitory on the other. The K_{41} acts in the first mentioned role and calcium in the latter. This is borne out by the experiments of Zwaardemaker.[12] It is an established fact that in healed and healing tuberculous lesions calcium is present in more than usual amounts. The antagonistic or mutually stabilizing properties of potassium and calcium in a gross effect has been quite clearly demonstrated in experiments with these elements on contractile tissues. We have the formula:

1. Calcium plus contractile substance equals systole or contraction.

2. Potassium plus contractile substance equals diastole or relaxation.

3. Both of these elements are indispensable in Ringer's solution.

In cases of excessive growth, gigantism, acromegaly, the anterior lobe of the pituitary gland is found to be enlarged. In acromegaly the lymphatic glands are found to be symmetrically enlarged.[13] According to Woods Hutchinson,[14] the secretions of the pituitary gland regulate growth as well as the relative proportions of the skeleton. The internal secretions of the pituitary gland are absorbed by the lymphatics.[15] The growth stimulating hormone known to be present in the anterior lobe of the pituitary gland is likely to contain a relatively large amount of K_{41}.

The Role of the Lymphatic System in Carcinogenesis

Sampson Handley[16] has definitely shown that lymph stasis is always a concomitant factor in the genesis of malignant growths. If lymph stasis is the histological picture of all precancerous states, let us consider, with reference to Fig. 2, the process through which this takes place.

1. A tissue is subjected to the chronic irritation of any given carcinogenic agent (*loc. cit.* I).

2. A persistent inflammatory condition supervenes in which the blood supply to the part is increased with a corresponding increase in the volume of lymph bathing the tissues.

3. The persistent exudate gives rise to the increased presence of fibroblasts. Fibrosis, added to the mechanical pressure of the exudate, produces an occlusion of the afferent lymph channels, and the condition of lymph stasis is the result. This fibrosis may extend to the blood vessels supplying the part, in which case we may have an apparent anemia instead of the more frequent congestion accompanying a neoplasm.

4. The lymph gland system finds itself inadequate to cope with the type and continuance of the irritation.

5. The growth hormones of the higher ductless glands are hyperstimulated.

6. The inhibitory calcium is crowded out of the scene.

7. The cells and all subsequent generations of cells are reconditioned with respect to their selectivity for K_{41}.

8. Instability—disorganization follows.

Experimental Part

The experimental technique involved in the separation of potassium from tissue, as well as the measurement of its radioactivity has occupied a considerable portion of our time.

The measurement of the radioactivity is most advantageously carried out by means of an aluminum-magnesium Geiger counter having a wall thickness of .005 inches (0.13 mm.). More details will be communicated later.

In separating hormones from the lymph glands we have sought to avoid any possibility of oxidation. We are at present attempting to effect a simplification of the lymph colloids by freezing with liquid air. We also hope to publish in the near future experimental evidence in support of this idea.

At present we are using the medullary portion of the lymph glands of the cow as the source of our hormone extract. This seems logical in view of the highly developed lymphatic system which the cow possesses as well as the relatively low incidence of malignant neoplasms found in cattle.

SUMMARY

1. A theory has been advanced to explain the role of potassium isotope K_{41} in cellular division.

2. The importance of the lymph as a medium for the circulation of growth and growth regulating hormones has been stressed.

3. The various factors in carcinogenesis following lymph stasis have been listed.

4. The above observations have been correlated so as to provide a general experimental approach to the main problem.

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VENOUS PRESSURE AND BODY WEIGHT DETERMINATIONS IN CONGESTIVE HEART FAILURE.*

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The purpose of this paper is to indicate briefly the significance of venous pressure determinations in certain patients with congestive heart failure. In view of the fact that venous pressure determinations are not always available to the general clinician we have attempted to establish a rough correlation between body weight changes and venous pressure in heart failure patients under treatment. Within certain limitations herein discussed, the body weight determinations serve as a guide to the efficacy of the treatment for congestive heart failure and not infrequently indicate the same general prognostic trend shown by venous pressure.

The determination of venous blood pressure is neither difficult nor troublesome. Until recently some of the direct and indirect methods described for venous blood pressure values served only to confuse the doctor and add to the countless pages of medical literature. This is no longer true; Griffith, Chamberlain and Kitchell[1] have described a simple and accurate modification of the direct method of Moritz and v. Tabora. This apparatus may be assembled by any physician in a few minutes, and with a few easy corrections clearly described by the authors accurate readings may be obtained. There is very little chance of error in this direct method with a needle in a vein attached through a side arm syringe to a manometer filled with saline or citrate solution. Any person who can perform venipuncture and adjust the punctured vein to the level of the right auricle can take venous blood pressure.

Twelve patients with heart disease of some sort

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and with different degrees of heart failure have been studied. All of these have had venous pressure and body weight determinations at the time of admission to the hospital and again toward the end of the hospital stay. In most instances numerous weighings and several venous pressure readings have been made. Other data, including the degree of dyspnea, orthopnea and edema, as well as the grade of apparent clinical improvement and the type of heart disease have also been set down (Table I).

In order to obtain controlled readings another group of ten patients without heart disease has been subjected to venous pressure determinations, all of which came well within the normal range (Table II) of 60 to 120 mm. of water.[2]

Clinical congestive heart failure is always attended by an increase in venous pressure. In most instances this increase occurs in the systemic venous circulation and the increase may be measured. This is primarily due to failure of the right ventricle to pass the blood efficiently through the lungs to the left ventricle and usually this type of failure is accompanied by edema. There may have been previous failure of the left ventricle but in most cases of congestive heart failure both chambers are at fault with the failing right ventricle directly responsible for the increased venous pressure. In occasional instances of pure left ventricular failure the systemic venous pressure is not increased and does not increase until the right ventricle also fails.

TABLE I

CONGESTIVE HEART FAILURE

Venous Pressure and Body Weight Before and After Treatment

No.	Patient	Age	Sex	Race	Clinical Diagnosis Heart	Admission			Venous Pressure		Weight		Clinical Improvement
						Dyspn.	Orth.	Edema	Adm.	Dis.	Adm.	Dis.	
1	G.P.	59	M	W	Hypertensive and Arteriosclerotic.	++++	++++	++++	260	80	156½	123	++++
2	W.H.	46	M	C	Hypertensive and Arteriosclerotic.	++++	++++	++++	300	165	141	126	++++
3	A.M.	51	F	C	Hypertensive and Thyroid.	++++	++++	+++	315	100	132½	124	+
4	E.B.	46	F	C	Hemorrhagic Pericardial Effusion.	++	++	+	270	75	141	127½	++++
5	W.P.	38	M	W	Rheumatic Aortic Insufficiency.	+++	++++	+++	250	95	173	158	++++
6	S.M.	42	M	C	Hypertensive and Arteriosclerotic; Bundle Branch Blk.	++++	++++	++++	270	100	158	126	++++
7	C.M.	31	M	W	Rheumatic; Mitral Stenosis; Adhesive Pericarditis.	++++	+++	+++	255	250	166	155	++
8	V.B.	35	F	C	Hypertensive	++	0	++	205	140	125	100½	+++
9	H.S.	36	M	W	Rheumatic; Mitral Stenosis.	+++	+++	++	160	100	145	144	++++
10	H.D.	53	M	W	Hypertensive and Arteriosclerotic; Auricular Fibrilla.	++++	++++	++	200	100	149	134	+++
11	M.B.	43	F	W	Hypertensive	+++	++++	++	260	140	162½	151	+++
12	J.E.	33	F	W	Rheumatic; Aortic Regurg. and Stenosis; Mitral Stenosis.	+++	+++	++	145	110	105½	97½	+++

Dyspn.—Dyspnea. Orth.—Orthopnea. Adm.—Admission. Dis.—Discharge.
++++ Marked. +++ Moderate. ++ Slight. + Very slight.
Venous Pressure Expressed in MM. Water.

TABLE II

VENOUS PRESSURE CONTROL READINGS

Patients Without Heart Failure

No.	Patient	Age	Sex	Race	Clinical Diagnosis	Venous Pressure MM. Water
20	W.W.	23	F	W	Chronic Cholecys.....	90
21	G.M.	31	F	W	Catarrhal Jaundice...	60
22	J.W.	57	M	W	Diabetes Mellitus....	70
23	H.L.	31	M	W	Aplastic Anemia.....	65
24	R.H.	40	M	W	Xanthoma Tuberosum Multiplex.	90
25	C.M.	47	M	W	Multiple Neuritis.....	85
26	E.C.	25	M	W	Infectious Mononucleosis.	60
27	J.Z.	22	M	W	Epilepsy.....	105
28	E.S.	53	F	W	Secondary Anemia....	72
29	M.S.	29	F	W	No Disease.....	60

Weiss[3] has described accurately the syndrome of left ventricular failure (cardiac asthma) and discussion in this paper will be confined to right ventricular failure and failure of both ventricles. In the average type of congestive failure the venous pressure may vary from 140 mm. of water to 300 mm. of water. Owing to the number of factors contributing to venous pressure single determinations do not necessarily indicate the severity and rate of progression of the heart failure; for example, a rising venous pressure beginning at 200 mm. of water may be more unfavorable than a falling pressure starting at 300 mm. of water. It has been stated that pressures of 200 or more,[4-5] especially if rising, call for venesection. While it is not the purpose of this paper to discuss venesection in the treatment of congestive heart failure, it so happens that none of the twelve patients in Table I had phlebotomy and all recovered, at least temporarily. We do not imply that venesection is not the good therapeutic procedure that it undoubtedly often is; but we do wish to emphasize that this procedure is not always essential in the treatment of patients with high venous pressures. Of course the determination of venous pressure is a very important factor in making a decision relative to venesection, a factor to be balanced along with other clinical findings.

Recently in a number of instances of early heart failure before the apparent onset of edema we have been able to detect the condition promptly, and institute rest and other therapy. True enough, the filling of the neck veins, study of the hand and arm veins at different levels and the venous pulse excursion in the subclavian triangle may apprise the astute clinician of early failure but there comes a time when accurate measurements of venous pressure serve to reassure and further sharpen the diagnostic sense. Herein lies the chief value of venous pressure determinations. We have experienced a number of instances in which the history and physical signs did not make out a clear case for heart failure but the venous pressure level indicated that condition by abnormally high values. It has been shown before that increased venous pressure may antedate the actual signs of congestive heart failure.[6-7]

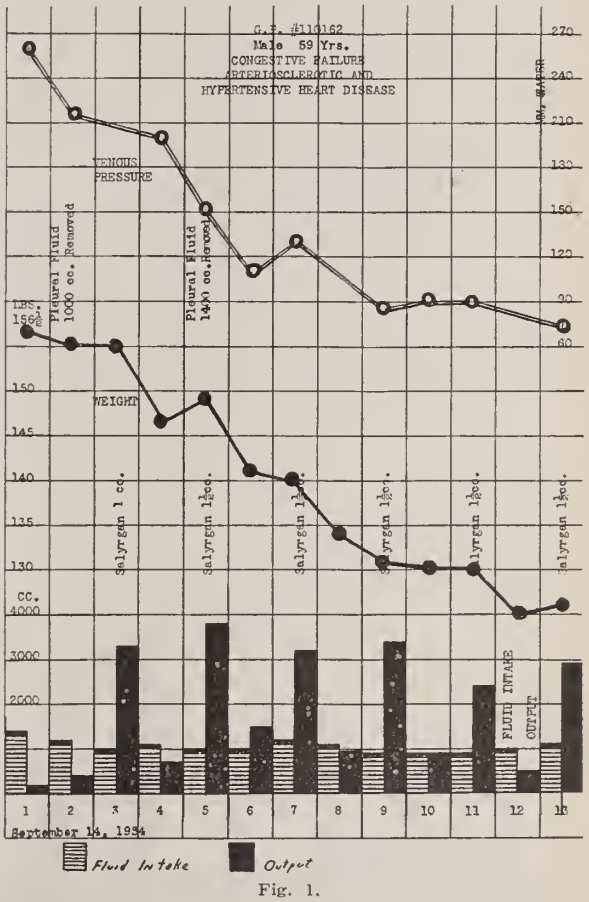

Fig. 1.

The determination of body weight in congestive heart failure patients has received too little practical attention. It is an excellent indicator of the loss

of edema fluid. For years we have depended upon the urinary output as a guide: this method is notoriously open to error, whereas body weight expresses with reasonable accuracy what is happening to the excess fluid in the patient's tissues. For example, in patient No. 1 (Fig. 1) there is a sharp fall in body weight after each successful exhibition of salyrgan, a sure and steady indication that the patient is improving. Venous pressure figures here serve a slightly different role. They tell the severe degree of failure and predict rapid improvement some six days prior to the lowest body weight. In other words, venous pressure has scaled down to normal levels here while there is still a great deal of edema present.

Although clinical correlations have been largely left out of this discussion no one can gainsay the value of signs and symptoms. Mechanical and laboratory determinations are assumed to be of secondary importance but at times are corroborative and helpful although obviously they may not supplant clinical methods of observation.

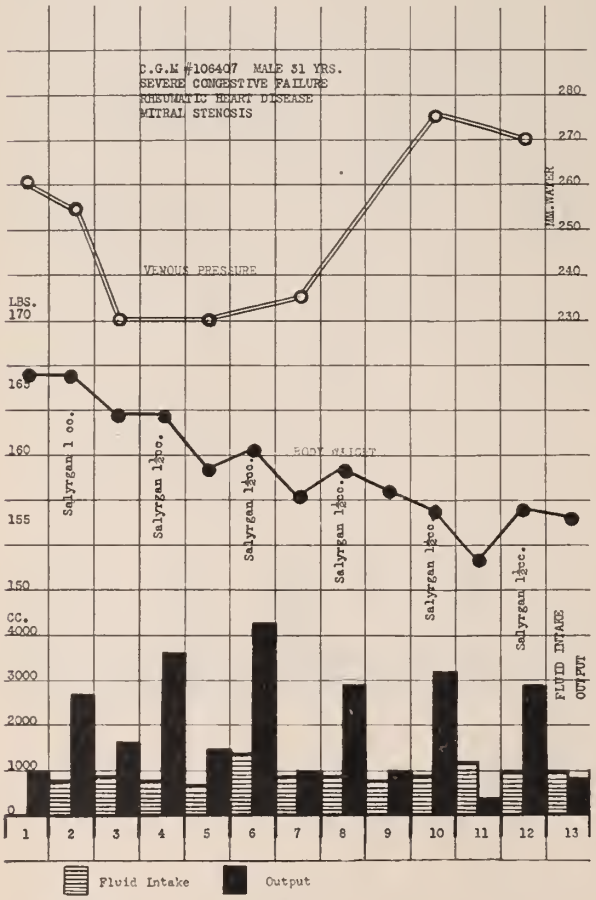

Fig. 2.

That it is not always safe to follow weight, urinary output or even clinical signs as prognostic guides is quite patent from the clinical history of patient No. 7 (Fig. 2). Here the body weight has fallen gently but the venous pressure has remained elevated. This introduces another cause of increased venous pressure not heretofore discussed, namely obstruction to venous return, which, we believe, accounts for the situation shown in Case No. 7. This patient has rheumatic heart disease, mitral stenosis, and after repeated attacks of congestive failure he was admitted to the hospital with further congestion. A low fluid intake associated with episodes of salyrgan diuresis appeared to bring about clinical improvement with a loss of eleven pounds of body weight. However, the venous pressure remained at high levels of 230 to 270 mm. of water, indicating that some unusual factor had become operative, probably a constricted pericarditis (concretio cordis). Another example of obstruction to venous return occurred in patient No. 4. This time increased pericardial pressure owing to a massive pericardial effusion interfered with venous flow effecting a high venous pressure. The removal of the pericardial effusion lead to a prompt fall in venous pressure and clinical recovery.

With the exception of the two cases just reviewed (Nos. 7 and 4) the initial venous pressures recorded on our patients have indicated roughly the degree of congestive heart failure and repeated readings have been even more helpful relative to a prognostic trend. Likewise, body weight curves have faithfully pictured the amount of edema fluid lost and have indicated improvement in fluid balance much better than urinary output records.

CONCLUSIONS

1. The apparatus for venous pressure determination described by Griffith, Chamberlain and Kitchell is simple and accurate.

2. Venous pressure determinations are helpful in the early diagnosis of congestive heart failure but prove more useful when used repeatedly to gauge prognosis.

3. The venous pressure falls more rapidly than the body weight when the patient with congestive heart failure improves under treatment.

4. Frequent body weight determinations serve as a more practical guide to the status of edema fluid in a congestive heart failure patient than do measurements or urinary output.

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DISCUSSION

DR. ALEX. F. ROBERTSON, JR., Staunton: Dr. Wood has brought very forcibly to our attention a simple and very readily adopted method in gauging our cases of congestive heart failure. We all have a great number of these cases, and I think it is a great help to have a method that is easily used by the general practitioner.

To emphasize again for a moment what Dr. Wood has said about the venous pressure, we know that the vast majority of cases of congestive heart failure are attended by an increased venous pressure. Eyster has stated that cardiac failure is that condition in which the venous pressure exceeds the range within which the heart is capable of responding by increased work to increased venous load, and sustained venous pressure above a normal level means invariably a failing heart muscle. There have been many modifications attempted in the interest of simplicity in estimating venous pressure, but they are in use only in teaching institutions. I have never attempted one myself, and I doubt if there is a practitioner here, who is not interested in cardiology, who has attempted an estimate of the venous pressure. So I think this method is increasingly important.

For the general practitioner two signs are brought out by Lewis which I think are important. One is increased pulsation in the neck veins, as observed above the manubrium, and the other is congestion of the liver.

One way of estimating the increased venous pressure, as Dr. Wood brought out, is the inverse proportion that exists between the increased fluid intake and the urinary output in these cases; but, as he said, it is very difficult to collect all the specimens, and that sometimes falls down. But I think the correlation he has shown between the venous pressure and the body weight is a very valuable procedure.

One word more in that connection, on a point I think he has not brought out. In those cases being reduced in weight by the use of salyrgan, we very often get a marked decrease in weight in the first twenty-four hours after the use of salyrgan. Then the patient may very often get an increase in body weight due to increase in fluid. They may come in in a week and apparently have not lost anything. But if we keep more frequent check on body weight, we shall find they have lost, and then have accumulated weight through increase of fluid.

DR. WALTER B. MARTIN, Norfolk: Dr. Wood has brought out some very valuable suggestions as to the management of certain cardiac cases with congestive failure. We have all seen cases that we could not compensate on the usual methods of rest in bed, reduction of salt and fluid intake, sedation and complete digitalization, but that would respond when the fluid balance was restored. As he has suggested, the mercurial diuretics, salyrgan and novasurol, used in conjunction with the ammonium salts, are very effective in restoring water balance. Following the elimination of excess fluids these hearts regain compensation and remain compensated as long as the water balance is maintained. We all recognize that failing compensation results in edema but it may also be true that accumulation of fluid in the body precedes, and in fact precipitates, decompensation.

I have in mind such a case, an elderly man who was compensated only after the elimination of excess fluids by use of salyrgan. It was then noted that he would tend to increase in weight and over a period of a few days would accumulate fluid to the extent of six or eight pounds without visible edema. Without any change in his program he would then begin to show signs of decompensation. Rales would appear at the bases of the lungs, there would be increased breathlessness and inability to lie flat in bed. Diuresis was again induced by use of salyrgan with immediate relief of symptoms and disappearance of signs of pulmonary congestion. Over a period of three years it has been necessary to continue the use of salyrgan at intervals of about five days. Throughout this time he has remained compensated and has been able to be at his office every day.

The rapid accumulation of weight in cardiac patients, an increase that cannot be accounted for by normal tissue gain, is very definite evidence that the patient is going to have trouble. The simplest way of following the course of these cases is to keep a record of body weight.

I was much interested in the case Dr. Wood showed, in which the body weight came down but the venous pressure remained elevated. He suggests the probable diagnosis of adhesive pericarditis. If it is the type of case with adhesive bands to the diaphragm, paralysis of the left diaphragm by section of the left phrenic nerve may result in striking improvement. About one year ago I had such a case in a young man. After two months of treatment compensation had not been regained. Section of the left phrenic nerve was followed by rapid improvement and eventually by complete compensation. The operation is attended with little risk and seems to be the method of choice in properly selected cases.

DR. H. S. DANIEL, Louisa: I should like to ask a question. Take a patient with beginning heart failure as we meet with it ordinarily in general practice, before he has a definite break, before he is very definitely short of breath, will the venous pressure give us an idea that that is coming?

DR. WOOD, closing the discussion: Dr. Robertson brings out quite clearly the importance of clinical observation. I do not think that we should be mechanically minded, an apparatus such as the electrocardiograph, blood pressure and venous pressure instruments should be used as evidence supporting clinical observations. It is quite possible to tell by physical examination when the venous pressure is elevated, but actual measurement is helpful in many border line cases and serves to strengthen the clinical impressions.

In reply to Dr. Daniel's question, we nearly always digitalize a patient with congestive heart failure before the trial of diuretics or other procedures.

Finally, it has been shown that the venous pressure will precede by hours the other signs of congestive heart failure. If the patient has shown the breathlessness of beginning heart failure and if this has extended to failure of the right ventricle the venous pressure will be elevated an appreciable time before edema appears.

GAS BACILLUS INFECTIONS—A STUDY OF THE INCIDENCE, TREATMENT AND MORTALITY.*

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Gas gangrene, first described in 1853 by Maisonneuve,[1] became of clinical significance in the Crimean War when sixty-five cases were collected and reported by Salleron. The incidence of this infection has increased with each succeeding European war. Gas bacillus infections have been less frequent in non-European wars, due in all probability to the constantly changing and sparsely fertilized terrain over which the major campaigns were waged. This has been especially true in American conflicts and Keen[2] stated that he did not see a case of gas gangrene during the War between the States. The trench warfare of the World War offered optimum conditions for the development of gas gangrene, and Taylor[3] demonstrated the Welch bacillus in 70 per cent of the wounds from which cultures were taken. Despite its high incidence in military surgery, gas gangrene has played a relatively minor role in times of peace and only during the past few years has its increasing significance in civil surgery been recognized.

BACTERIOLOGY

The B. aerogenes capsulatus is the organism most frequently encountered in gas gangrene. This bacillus was first isolated in 1891 by Welch and Nuttall[4] from the blood of a man dying from a ruptured aneurysm of the aorta. The aneurysm eroded through the chest wall, permitting the bacillus to enter the blood stream with a resulting general emphysema. Welch described the organism as a large, straight or slightly curved, encapsulated, nonmotile, obligatory anaerobic, Gram-positive bacillus with square cut or slightly rounded ends which occurs singly, in pairs, clumps or short chains. He was unable to demonstrate spore formation in the early cultures, but this was noted by Frankel who also described the Welch bacillus the following year. The presence of spores explains the resistance of the organism and the long latent period which occasionally precedes the reappearance of an infection following delayed secondary operations.

Attempts have been made to show that the B. aerogenes capsulatus is only one of a number of gas-forming organisms and that it does not merit the prominent role formerly ascribed to it as the causative factor in the large majority of cases of gas gangrene. In 1900, Welch[1] stated that "While it has been demonstrated that various bacteria may be concerned in producing gaseous affections, it is now evident that the bacillus which I discovered in 1891 and to which I gave the name B. aerogenes capsulatus is the one whose causative agent is best established and most frequently in action." This statement is still true and while it is recognized that the Welch bacillus is frequently associated with other aerobic and anaerobic organisms, it is undoubtedly the causative organism in at least 80 per cent of gas gangrene encountered in civil practice. A number of other closely allied organisms have been cultured from gas infections, the Vibrion septique of Pasteur and the B. odematiens of Novy occurring most frequently in this secondary group.

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INCIDENCE AND MORTALITY

In 1900 Welch[1] was able to collect forty-six proven cases of gas bacillus infection. In thirty cases the Welch bacillus was associated with other organisms, usually streptococcic or staphylococci. Sixteen cases were observed in Baltimore, sixteen others were recorded by American observers and only fourteen were reported abroad. The mortality for the entire group was 59 per cent. Cramp,[5] in 1912, found 187 cases in the literature with a gross mortality of 48 per cent and reported twenty-five cases with a mortality of 44 per cent from the wards of Bellevue Hospital over an eight year period. Weintrob and Messeloff,[6] in 1927, reported eighty-five gas bacillus infections treated in the Bellevue Hospital from 1911 to 1926, with thirty-nine deaths, a mortality of 45.9 per cent. There were 618,105 admissions during this period, or one case for every 7,310 admissions. This is the largest series reported in civil life and furnishes an index to the incidence of gas bacillus infections in urban practice.

In 1930, Millar[7] collected 607 cases of gas bacillus infection occurring in civil life. No obstetrical infections were included and only proven cases in the "Post-Lister" period were reported in this series. The total mortality was 49.7 per cent. Males were affected six times as frequently as females. The third decade of life furnished the greatest number of cases. Gas bacillus infections were reported from all parts of the world and no seasonal variation was evident. Two hundred and twenty-seven of this group followed fractures, the majority of which were compounded. The tibia and femur were most frequently involved. Gunshot wounds, operations, intravenous and subcutaneous injections, gangrene and abscesses were the most frequent predisposing causes in the remainder of the cases.

TABLE 1
GAS BACILLUS INFECTIONS
Incidence—Race and Sex

Gas Gangrene	Gas Infections
24 Cases	10 Cases
Race	Race
White 6—25%	White 5—50%
Negro 18—75%	Negro 5—50%
Sex	Sex
Male 22—92%	Male 5—50%
Female 2— 8%	Female 5—50%

At the last meeting of the Medical Society of Virginia, Stone and Holsinger,[8] in reporting sixty-seven cases treated at the University of Virginia Hospital during the past twelve years, first called attention to the relatively high incidence of gas bacillus infections in Virginia. This represents one case for every 1,035 hospital admissions and is exceeded in total number only by the series reported from the Bellevue Hospital over a longer period of time. Most significant was the increased incidence during the second six year period, which was more than twice the incidence of the first. This recent increase of gas bacillus infections in Virginia is probably due to a combination of circumstances. The large number of street accidents caused by automobiles and trucks, the more general use of tractors and heavy machinery in farming and the increased industry in the South all favor the production of injuries which are prone to develop gas bacillus infections.

MILITARY INCIDENCE

Simonds[9] attributed the higher incidence of gas infections in war to the penetrating nature of the injuries, as he states that spores capable of causing gas gangrene are probably no more abundant in the soil of battlefields than in the dust from cities. He examined the uniforms of soldiers for spores and found that all the uniforms worn in the trenches contained spores of anaerobic bacteria and more than 80 per cent contained spores of B. welchii. In view of this, an incidence of only 1 per cent of gas infections in the war wounds of the American and British Expeditionary Forces appears remarkably low. The mortality in the American Army was 48.5 per cent and in the British Army was said to be between "20 and 50 per cent."[10]

LOCATION OF LESION

The usual conception of gas gangrene is that of a rapidly spreading infection, arising in and extending through muscle bundles, following penetrating and crushing injuries associated with gross soiling and the retention of septic foreign material. This is true in the majority of cases but no part of the body is immune and gas bacillus infections have occurred following herniotomies, interval appendectomies, pelvic inflammatory disease, subcutaneous and intravenous injections, tonsillectomies, intracranial injuries, tooth extractions and catheterizations.

TREATMENT

Prior to the World War the treatment of gas bacillus infections tended to be radical, and it was

generally held that an early amputation was indicated in gas gangrene of an extremity. In 1912, Cramp[5] advocated more conservative measures and reported several cases successfully treated by multiple long incisions through the involved area followed by compresses of hydrogen peroxide. Local excision of diseased muscle was practiced occasionally in civil surgery but not until the late war was the value of debridement, as we know it today, fully appreciated. At the close of the war the treatment was well standardized. This consisted chiefly of excision of all devitalized muscle, removal of foreign bodies and bony fragments, separation rather than division of uninvolved muscles, wide separation of the wound margins and insertion of Carrel tubes for subsequent irrigation with Dakin's solution. Various antisera were first used during the war with varying success. These early sera were monovalent and therefore specific for only one organism. When used indiscriminately the results were unpredictable and frequently discouraging. The present polyvalent antitoxin, an outgrowth of the war-time antisera, has proved an invaluable adjunct in the treatment of gas gangrene. Surgery has not been supplanted by the combined antitoxin but a judicious combination of these two measures has not only appreciably lowered the mortality but has frequently permitted the substitution of conservative operative procedures for former mutilating amputations.

Favorable results have followed the use of small doses of X-ray in the treatment of gas infections.[11] While this has not been used in a sufficient number of cases to warrant conclusions, Kelly states, "X-ray can do no harm, it is accessible and easily applied, and apparently has been beneficial in the reported cases."

Virulence of Organism

The significance of a positive culture for the gas bacillus varies with the associated clinical condition. Keen[2] recognized this and differentiated between "Gas Gangrene" and "Gas Infections." The former, he states, "is the result of a progressive developed infection and is a most dangerous condition." This is the classical type of infection, usually seen in traumatized extremities, characterized by rapid necrosis of muscle, widespread formation of gas, and an early exodus if not vigorously combated from the onset. The second and milder form usually develops later, is frequently superimposed on a pre-existing infection, involves the muscle little if at all, produces little gas, responds

TABLE 2

GAS GANGRENE

Surgical Treatment

January 1, 1931, through December 31, 1931

Patient	Race	Sex	Age	CAUSE	Operation	Antitoxin	Culture	Hospital Stay in Days	Result
H.S.	C	M	28	Electrical Burn, Hand	Amputation		B. welchii	40	Improved
C.M.	C	F	52	Nail Puncture, Foot (Diabetic).	Amputation		B. welchii	14	Improved
J.W.	C	M	54	Ulcer, Foot (Diabetic)	Amputation		B. welchii	96	Improved
B.J.	C	M	34	Human Bite, Finger	Amputation			14	Improved
B.S.	C	M	34	Shotgun Wound, Leg	Amputation		B. welchii	14	Improved
N.C.	C	M	52	Comp'd Fracture, Tibia & Fibula.	Amputation			2	Dead
H.C.	C	M	20	Shotgun Wound, Thigh	Debridement		B. welchii	58	Well
W.T.	W	M	43	Crushing Injury, Hand	Amputation		B. welchii	50	Improved
J.W.	C	M	49	Comp'd Fracture, Tibia	Amputation			35	Improved

9 Cases—1 Death (11% Mortality); 8 Amputations; 1 Debridement.
Average Hospital Stay—35 Days.

readily to specific treatment and frequently gives the impression of being an accidental finding or at most an indication of lowered resistance of the host. Between these extremes all variations may be found. Mortality tables which include all cases presenting positive cultures are therefore misleading, especially in view of the fact that the host in many of the latter, more innocuous, cases frequently dies as a result of the underlying condition with the gas infection completely cured. In the following analysis a distinction is made between the cases of "Gas Gangrene" and "Gas Infections."

REPORT OF CASES

A study has been made of all cases of gas bacillus infection treated in the Medical College of Virginia hospitals from January 1, 1931, to the present date. This period has been chosen as it

TABLE 3

GAS GANGRENE

SURGICAL AND ANTITOXIN TREATMENT

January 1, 1932———

Patient	Race	Sex	Age	CAUSE	Operation	Antitoxin Units	Culture	Hospital Stay in Days	Result
C.M.	W	M	32	Comp'd Fracture, Radius & Ulna.	Amputation	P- T-10,000		28	Improved
W.F.	C	M	24	Shotgun Wound, Elbow	Debridement	P-1,000 T-30,000	B. welchii	45	Well
M.B.	C	F	6	Crushing Injury, Leg and Thigh.	Debridement	P-1,000 T-20,000	B. welchii	21	Well
J.H.	C	M	42	Shotgun Wound, Thigh	Debridement	P-1,000 T-50,000	B. welchii	55	Well
J.L.	C	M	25	Stab Wound, Arm	Debridement	P- T-50,000	B. welchii	94	Well
R.B.	C	M	22	Comp'd Fracture, Tibia & Fibula.	Amputation	P-1,000 T-40,000	B. welchii	82	Improved
J.W.	C	M	23	Shotgun Wound, Thigh	Debridement	P-1,000 T-20,000	B. welchii	54	Well
J.M.	W	M	45	Shotgun Wound, Thigh	Debridement	P- T-10,000	B. welchii	44	Well
N.T.	C	M	16	Comp'd Fracture, Tibia & Fibula.	Debridement	P- T-10,000	B. welchii	195	Well
E.L.	W	M	33	Crushing Injury, Arm	Debridement	P-2,000 T-50,000	B. welchii	60	Well
E.R.	W	M	41	Comp'd Fracture, Radius, Ulna & Humerus.	Debridement	P-1,000 T-40,000	B. welchii	3	Dead
W.S.	C	M	5	Comp'd Fracture, Tibia & Fibula.	Amputation	P-1,000 T-40,000	B. welchii	102	Improved
D.F.	C	M	20	Shotgun Wound, Pectoral Muscles.	Debridement	P-1,000 T-70,000	B. welchii	57	Well
R.B.	C	M	10	Comp'd Fracture, Tibia & Fibula.	Debridement	P- T-40,000	B. welchii	150*	Well
J.C.	W	M	13	Crushing Injury, Foot	Debridement	P-2,000 T-20,000	B. welchii	48	Well

*Patient still in hospital.
15 Cases—1 Death (6.6% Mortality); 3 Amputations; 12 Debridements.
Average Hospital Stay—69+ days.

coincides with the method of diagnosing and filing histories used at the present time.

Thirty-four cases of gas bacillus infection were treated, or one case for every six hundred and forty-seven hospital admissions. Positive cultures for B. welchii were obtained in twenty-eight of the infections; the remaining six were so diagnosed because of unmistakable clinical or pathological findings.

GAS GANGRENE

Twenty-four cases of typical "gas gangrene" have been treated during this period. The predisposing causes were: compound fractures, nine; shotgun wounds, seven; crushing injuries, three; electrical burn, human bite, stab wound, ulcer (diabetic), nail puncture (diabetic), one, each. All of these injuries were limited to the extremities. Eighteen patients were colored and six were white. Twenty-two patients were male and two were female.

The first nine cases, treated between January 1, 1931, and January 1, 1932, did not receive prophylactic or therapeutic injections of gas gangrene antitoxin. Surgical measures alone were used in these early infections. The involved extremity was amputated in eight cases and an extensive debridement was done in the remaining case. One patient died, a mortality for the non-antitoxin cases of 11 per cent. The average hospital stay was thirty-five days. This series is reported in detail in Table 2.

All cases of gas gangrene treated since January 1, 1932, have received gas gangrene antitoxin. The majority of accident cases presenting extensive and crushing injuries received a prophylactic injection and all cases which developed the infection were treated by large therapeutic doses of gas gangrene antitoxin. Fifteen cases have been treated since January 1, 1932. The surgical procedures have been less radical than those followed in the earlier infections. An extensive debridement was done in twelve instances and only three amputations were necessary. One patient in this series died, a mortality for the cases receiving gas bacillus antitoxin of only 6.6 per cent. The average hospital stay was more than sixty-nine days or approximately twice that of the non-antitoxin cases. This series is reported in detail in Table 3.

The combined mortality for all cases of gas gangrene was 8.3 per cent.

GAS INFECTIONS

Ten additional cases since January 1, 1931, had positive cultures for B. welchii. These correspond to the so-called "gas infections" of Keen, for the majority of these patients did not show clinical evidence of gas gangrene, and the infections in which muscle destruction could be demonstrated responded immediately to gas gangrene antitoxin. Positive cultures for B. welchii were obtained in three cases following drainage of abscesses associated with pelvic inflammatory disease. The remaining seven infections followed operations upon the gastro-intestinal tract. In six of these cases peritonitis was present at the time of operation as a result of a perforation of the small or large intestine. The remaining case followed the extirpation of a carcinoma of the colon with extensive secondary infection. The associated conditions are presented in detail in Table 4. Of especial significance is the fact

TABLE 4
GAS INFECTIONS

Developed Secondary To:	
Pelvic Inflammatory Disease	3
Shot Gun Wound of Colon	2
Carcinoma of Colon (Mikulicz operation)	1
Strangulated Femoral Hernia	1
Perforated Duodenal Ulcer	1
Ruptured Appendix	1
Ruptured Jejunum (Traumatic)	1

that seven of these ten cases had fecal fistulas when the positive cultures were obtained. As the B. welchii is a normal inhabitant of the gastro-intestinal tract, in the absence of clinical evidence of gas infection, the positive cultures may have been due to fecal contamination. Although eight fatalities occurred in this series of ten cases, only one patient had a demonstrable gas infection at the time of death. This resulted from a shotgun wound of the abdomen in an obese woman. The terminal ileum was torn across and a resection was necessary. Death occurred five days later, and an autopsy revealed a generalized peritonitis, an acute empyema from multiple perforated ulcers of the esophagus and an unsuspected gas bacillus infection of the rectus abdominis muscles. The gas infection played a minor part in this fatality and was absent clinically at the time of death in the remaining fatal cases in this series.

Of interest in this series of ten cases is the equal division of race and sex, five cases of each occurring. This would suggest that the high incidence of gas

bacillus infections in the male and especially in the Negro may be due to occupational hazards and a propensity for fighting rather than an inherent weakness of the race and sex.

PRESENT TREATMENT AT THE MEDICAL COLLEGE OF VIRGINIA HOSPITALS

All penetrating or crushing injuries, especially when grossly contaminated, are treated as potential gas bacillus infections. The wounds are excised, preferably under a general anesthetic, all foreign material is sought and removed, and light dressings are applied which permit frequent inspection of the part. After testing the patient for sensitivity to horse serum, a prophylactic injection of five cubic centimeters of gas gangrene antitoxin is given intramuscularly. This contains 1,500 units of antitetanic serum and 1,000 units each of B. welchii and Vibrion septique antitoxin. A second prophylactic injection is frequently given twelve hours later and in very extensive injuries a therapeutic dose of twenty cubic centimeters, containing 10,000 units each of B. welchii and Vibrion septique antitoxin, is injected intramuscularly. The patient is closely observed during the next few days for local or general manifestations of gas gangrene. Excessive pain in the incision or tenderness over the large vessels supplying the part is suggestive of a beginning gas bacillus infection. An increasing pulse rate is frequently the first sign of an early infection and always calls for an inspection of the wound. A markedly elevated temperature is sometimes present at the onset of the infection but the absence of fever is never reassuring, as well advanced gas gangrene may be accompanied by a normal or even subnormal temperature. Careful palpation over a suspected incision with the hand encased in a sterile glove is the surest method of determining the presence of an early gas infection. If air trapped in the incision at the time of operation and subcutaneous emphysema from pulmonary injury can be excluded, the characteristic fine crepitus is virtually pathognomonic of an underlying gas bacillus infection. The removal of sutures and demonstration of large square cut Gram-positive bacilli in the thin brownish offensive discharge completes the diagnosis for all practical purposes. Valuable time will be lost if operation is withheld until positive anaerobic cultures are obtained and only in exceptional cases is this delay justified.

A debridement under spinal or general anesthesia is immediately done through a generous skin incision with excision of all diseased muscle and thorough exposure and drainage of all involved portions of the wound. Bleeding is carefully checked, the margins of the incision are spread apart and dry gauze is loosely packed throughout the wound. The dressing is moistened at hourly intervals by one of several solutions. Dakin's solution is used when large vessels are not exposed, but the danger of a secondary hemorrhage frequently necessitates the substitution of potassium permanganate (1-5,000) or one-half strength hydrogen peroxide. The latter solution is avoided when the margins of the wound are undermined, as further extension may result from bubbles dissecting beneath the tissues. Therapeutic doses of gas gangrene antitoxin are injected intramuscularly or intravenously at intervals of four to eight hours, depending upon the extent and virulence of the infection. Twelve hours after operation the gauze is removed and the wound is inspected. Any suspicious areas are carefully palpated with the gloved hand. If the infection is still present a further debridement may be done, and only in the exceptional case is it necessary to resort to a guillotine amputation in order to check the spread of the infection. In the majority of cases the primary debridement results in an immediate local and general improvement. If the wound appears satisfactory, compresses are begun or Carrel tubes are inserted and irrigations are continued until all slough has separated and healthy granulations appear.

The blood destruction incident to gas gangrene rapidly produces a profound anemia and frequent blood transfusions are necessary. Whole blood is usually given by the multiple syringe method, especial care being taken that the syringes are used only once, otherwise infection may be carried from the recipient to the donor.

This method has been followed in the last fifteen cases of gas gangrene with considerable success. Only one fatality occurred in this series, and only three amputations were necessary. A comparison with the earlier non-antitoxin cases indicates that these favorable results have been due in a large measure to repeated injections of therapeutic doses of gas gangrene antitoxin. Prophylactic injections of the antitoxin are not always preventive, but appear to be of definite value even in the case which subsequently develops gas gangrene, for, as

Dr. Bigger[12] recently pointed out, gas bacillus infections which develop following prophylactic injections appear to be milder and more amenable to subsequent specific treatment.

CONCLUSIONS

1. Gas bacillus infections occur with surprising frequency throughout this section of the country.
2. All extensive and crushing injuries, especially when associated with compound fractures or shotgun wounds, are potential gas bacillus infections and should be treated by excision and prophylactic injections of gas gangrene antitoxin.
3. Early recognition of gas gangrene is imperative and should be immediately followed by an extensive debridement and frequent therapeutic doses of gas gangrene antitoxin.
4. Amputations should be done only when more conservative measures fail to check the spread of the infection.
5. By following this treatment the mortality from gas gangrene has been materially lowered and many amputations have been avoided at the Medical College of Virginia hospitals.

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Medical Arts Building.

DISCUSSION

DR. H. B. HOLSINGER, Farmville: Dr. Warthen has presented to this Society a powerful weapon for use in the treatment of gas gangrene. If you will review his paper you will find that up until 1900 the total mortality of gas gangrene was 59 per cent. From 1900 until 1912 there had only been a decrease of 11 per cent. From 1912 until 1926 there had been a decease of only 3 per cent, the mortality being 45.9 per cent.

Dr. Stone and I, in our reported cases, treated with a monovalent antitoxin and radical debridement, had a mortality of 15.3 per cent. Dr. Warthen has greatly improved upon this by the use of polyvalent antitoxin and reports a mortality of 6.6 per cent. I think that the greatest victory was the reduction in number of amputations in cases untreated with antitoxin from 88 per cent to those treated with polyvalent antitoxin to 20 per cent. Of course, we must not forget that the debridement is the most important factor in the treatment of gas gangrene, and antitoxin is only a secondary aid in combating the disease. Blood transfusions are also very important and I believe citrated blood is as effectual as that given by the direct method.

I wish to congratulate Dr. Warthen upon the excellent results he has obtained in treating gas gangrene.

COLLES' FRACTURE.*

M. H. TODD, M. D.,
Norfolk, Va.

I wish to call attention to three points in the treatment of the familiar Colles' fracture at the wrist.

First, after adequate reduction of the distal fragment of the radius, there is ordinarily no particular tendency to re-displacement. Reduction can therefore be maintained by simply arranging the splint to make a little pressure over the distal fragment,

*Read before the sixty-fifth annual session of the Medical Society of Virginia, at Alexandria, Va., October 9-11, 1934.

to prevent its riding back dorsally again into the silver-fork position.

The ordinary straight wood splint can be used, if desired, on the palmar surface of the forearm, or on both surfaces; but very careful attention is necessary to see that there is sufficient felt padding under the palmar surface of the radius to hold the main portion of the bone up dorsally where it belongs. It is really very much easier to use a molded plaster splint, which can be made to conform to the normal curved palmar surface of the radius without extra padding. The commercial curved Colles' fracture splint can also be used, padding it if necessary to fit the patient's forearm. In any case, the main portion of the radius must be held firmly enough to provide counter-pressure against the force holding the distal fragment in place. I illustrate these points of pressure and counter-pressure in the first picture herewith.

There is, by the way, another advantage in using molded plaster rather than a board splint: the upper end of the splint can be extended to the elbow, or part way around it, thereby maintaining partial supination and preventing the wrist from turning into complete pronation as it otherwise tends to do.

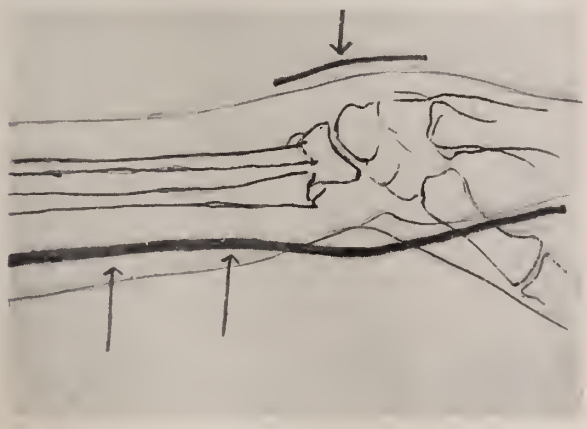

Fig. 1.—Diagram illustrating pressure and counter-pressure.

The second point I wish to make is that any splintage should permit free motion of the fingers and thumb from the very first. All small uses of the hand—writing, eating, buttoning of the clothes, etc.—should be resumed within a day or two after the injury. Office men can return to their work practically at once without loss of time. It is of immediate benefit to the whole hand, to insist on this very early resumption of actual functional use. The day when the Colles' fracture was treated by complete and prolonged fixation of the whole hand, with splints extending clear out to the ends of the fingers, is fortunately past. Such fixation could, and did, have only one result, namely, a deplorable stiffness of the hand, lasting all too frequently for the rest of the patient's life. Such treatment at once explains the notorious frequency, in the past, of lawsuits because of serious impairment of function.

Fig. 2.—Front and lateral views of molded splint.

I illustrate in the second picture the molded plaster splint, allowing free motion of the fingers and thumb. You will notice that the splint only reaches to the life-line of the hand, not to the web of the fingers; and the reason for this is at once apparent when the surface anatomy of the hand is recalled; for, strange as it may seem, it is the life-line, not the web of the fingers, that corresponds to the metacarpophalangeal joint, as may be verified by inspection of one's own hand. Further, the splint is cut away over the thenar eminence, to allow the thumb to be brought around in apposition to the little finger. It is incidentally important to see that the thumb is also exercised in complete abduction, for, otherwise, adduction contracture may occur.

As a matter of fact, the splintage should permit the patient to make a good fist, for, otherwise, the metacarpophalangeal row of joints, the proximal knuckles, will surely stiffen more or less; and their flexibility is absolutely essential to really good use of the hand.

Moreover, a little reflection will show that no additional security of fixation of the fracture is to be gained by fixation of the fingers, as used to be done; while the all-important flexibility of the hand is

inevitably endangered, and frequently ruined by such fixation.

In these days, the usual Colles' fracture should result in a hand so flexible that the patient can resume such use as playing the piano; and such a result demands strict attention to complete finger motion, from the very first.

By the way, to go back a moment, you will notice that there is a narrow band of molded plaster of Paris extending across the dorsum of the wrist, in this second picture. This is held snugly until it hardens, thereby definitely fixing the broken fragment and preventing its return to the silverfork position. This is the arrangement that is spoken of in the first paragraph of this paper.

A little detail in putting on this little band is to see that it slants across the wrist enough to avoid pressing on the tip of the ulna. Such pressure might cause a sore, and furthermore it would precisely interfere with the restitution of normal ulnar position that I now wish to mention.

This is the third point that I wish to make in the treatment of Colles' fracture. If the lower end of the ulna is displaced, as it commonly is, toward the palmar aspect of the wrist, this deformity should be corrected. No attention is generally paid to this point, whereas it contributes a good deal to any deformity left in the end-result, as well as to pain and disability.

As a matter of fact, I have a fairly definite notion that displacement of the ulna interferes quite a little with the circulation of the hand by distorting the relations of the ulnar vessels, just as displacement of the fragment of the radius interferes with the flow of blood through the radial vessels. Better circulation of the hand is very evident when correct radial reduction has been attained; and I think that I can notice a further betterment when the ulna is put back where it belongs. Its lower end should protrude prominently on the dorsal aspect of the wrist, and should not be allowed to remain depressed, as it commonly is, toward the palmar aspect.

It is not difficult to arrange suitable padding of felt, or otherwise, along the ulnar border of the splint, to take care of this.

Fourth, and last, it is very important to give a daily inspection to the splintage of this fracture for the first several days; otherwise, as swelling abates, the splint becomes too loose. Snug, though not really tight fixation is to be maintained at all times. I forbear from more than mentioning at this point the tragedy that may follow really tight splintage left on too long, namely, ischemic contracture.

Please note that the splintage I have described is intended strictly for the Colles' type of fracture; other fractures of the radius and ulna may present different problems entirely.

I disagree very decidedly by the way, with the practice at some clinics, of immobilizing the hand away down in palmar flexion at the wrist; this is a most ungainly position in which to hold the hand, and it directly interferes with the free active usage of the fingers that is so necessary to early and perfect return of function. Further, such flexion of the hand only holds the radial fragment by indirection, by pulling on the dorsal ligaments; whereas it is so much simpler and more certain to hold the fragment by direct pressure over it. True, the method of flexion is orthodox, and many good men use it; but I see little rationale in it, and have no liking for it at all.

I have not gone into the matter of reduction of Colles' fracture, believing that you are all familiar with it; the fact is, of course, that really complete reduction of the radius must be attained, and that it should be done under adequate anesthesia, local or general. I am sure that you all know this, and that it needs no emphasis from me.

In summary, therefore, I wish to call attention to three points in treating Colles' fracture: first, splintage should hold the fracture by direct pressure and counter-pressure; second, provision for free and active use of the fingers from the first day is essential; and, third, it is important to restore the displaced ulna to its normal dorsal position.

712 Botetourt Street.

DISCUSSION

DR. H. PAGE MAUCK, Richmond: I think we are all very grateful to Dr. Todd for his presentation of this subject. I think it is a very timely one. We all know that Colles' fracture is one of the commonest fractures we have—and, I might add, the poorest treated.

The points Dr. Todd has brought out I agree with in the main, but there are just a few points I want to emphasize. I have a few slides I shall use in the discussion.

First of all, we must remember that Colles' fracture is a compression fracture. It is usually caused by falling with the hand dorsally flexed, so the back part of the

radius is the depressed part. The deformity is produced by backward displacement of the fragment and backward tilt of the displaced fragment.

(Shows slides.) This is a tracing of an X-ray photograph before and after reduction and, I think, explains that the radial deviation is accounted for by the actual shortening of the radius that takes place due to the backward tilt. An angulated bone is a shorter bone.

The backward tilt of the lower fragment, as I called to your attention, is a compression. When it is corrected, there is usually a gap between the two fragments on the posterior aspect, due to the compression. Dr. Todd told us a few minutes ago there is no particular tendency toward redisplacement. There is no tendency to redisplace after reduction, but there is a tendency for the displaced fragment to tilt backward, reproducing the silver-fork deformity.

We have looked around to find, as far as we could, a commercial type of splint. This type of splint is the one that we use in the fracture service in the Medical College of Virginia Hospital and in our own practice. It is known as a Walker splint. You can buy it at the commercial places for about seventy-five cents apiece. You can buy it for right and left, and in several different sizes. They can be used over and over, and I think it is well for anyone in general practice to equip himself with them.

If Colles' fracture is not reduced, it makes no difference what type of splint you put on. The splint itself is not going to reduce it, but it is necessary to have a splint that will maintain dorsal flexion and ulnar deviation after the reduction. In this picture the splint has been applied, but deformity still exists.

Now, in regard to reduction of Colles' fracture. It is taught by most text-books, and the practice, I think, of most is to reduce Colles' fracture under an anesthetic. It is seldom that I use an anesthetic of any kind in the reduction of a Colles' fracture, either local or general. Of course, in children, and in those cases where there are bilateral fractures, an anesthetic is necessary. If the fracture is handled gently, if at the time of reduction traction is put on the hand by an assistant shaking hands with the patient, and pulling this by gentle pressure, or by giving it a twist, the distal fragment rides into position without any difficulty. I do not believe that in the past six or eight months we have given a patient, other than a child, a general anesthetic for reduction of Colles' fracture.

I think it is criminal, in the treatment of almost any fracture, other than fracture of a metacarpal bone or a phalanx, to extend your splint beyond the metacarpophalangeal joint.

DR. TODD, closing the discussion: There is nothing further for me to say except that I am obliged to Dr. Mauck for calling attention to what is really the important thing, after all: Of course, you must get the fragment back in place. I did not emphasize that, assuming that you were all familiar with it.

In regard to anesthesia, I have been spoiled by having a very good man who puts them to sleep for a few minutes with gas anesthesia. I am coming to use less anesthesia than I did, but I generally use it.

The splint to which Dr. Mauck called attention is very good. If you use the wooden splint and avoid the tip of the ulna, bandaging across here (indicating), you get the same result that I have mentioned.

THE VALUE OF X-RAY EXAMINATIONS IN INDUSTRIAL SURGERY.*

J. T. MCKINNEY, M. D.,
Roanoke, Va.

The modern treatment of fractures has been greatly aided by the almost universal use of the X-ray. Industrial corporations, compensation boards, insurance companies, and even laymen all demand that injured workmen have adequate X-ray examinations when needed.

The accumulated experience of surgeons everywhere teaches that a proper diagnosis, and early recognition of a fracture, with prompt adequate treatment will save many days of disability, and enable the injured workman to return to his job much sooner, thereby saving thousands of dollars for his Company.

We want especially to emphasize that a careful physical examination of all injured persons should be made with the patient's clothing removed, and that a careful history of the cause of accident should be obtained, if possible, from the patient or nearby observers.

The examining physician should order an X-ray if there is pain upon motion, marked swelling or soft tissue traumatism, tenderness or undue mobility

*Read before the Association of the Norfolk and Western Railway Surgeons at its meeting in Atlantic City, September 26, 1934.

of any of the extremities or joints, with or without crepitation, or symptoms of an unusual or grave character. If, at the initial examination, the patient appears to have been only slightly injured, but later his symptoms become worse, an X-ray should be ordered.

However, judgment as well as discretion must be exercised, for not every trivial or minor injury can or should be X-rayed. This is particularly true in these days of economic uncertainty when all businesses are cutting expenses wherever possible. On the other hand, employees in some of the industries are encouraged to bring personal damage suits by unscrupulous lawyers. Some laborers can make more by drawing sick benefit insurance than by working short hours. In a great many cases of this kind a negative X-ray examination is of inestimable value.

Head injuries are of major importance, and fractures of the skull probably rank fifth or sixth in the percentage of fractures encountered. No other fracture escapes attention so easily, and it is important to know that you may acquire fractures of the skull without pain, swelling, tenderness or symptoms of any character over the site of the fracture. Tenderness is almost regularly absent in fissured or linear fractures of the skull.

Every skull receiving violence, even though slight, imparted directly or indirectly, with or without accompanying symptoms of intracranial injury or pressure, should be considered as probably fractured until proven otherwise.

The diagnosis of fracture of the skull in most cases, with the exception of compound fractures, will be made with the X-ray. Films of good detail must be obtained by the use of the Bucky diaphragm and double intensifying screens. A routine examination with eight films, consisting of two lateral views, one antero-posterior or frontal view and one postero-anterior or occipital view, all stereoscopic, should be made on all cases. The vertical and orbital plates of the frontal bone, center of the squamous portion of the temporal bone and center of the occipital fossa are weak spots in the skull and are most often injured.

Bone injury may be slight, but grave lesions of the blood vessels or brain may be present or, as is frequently noted, extensive bone injury may be present with slight cranial involvement.

Various tables of statistics show an average of eight to ten males with fractured skull to one female. About one to five cases of head injuries show fractured skull. Fractures may be complete or incomplete, that is when the inner table is fractured and the outer is not fractured. The character of a fracture line may be vertical, horizontal, oblique, circular or stellate.

If an injured head case is very irritable, and it is difficult to X-ray, a hypodermic of morphine may be administered. A negative X-ray report with continued and increasing symptoms of compression does not contra-indicate surgical procedure.

The roentgenologist must be familiar with the normal appearance of the skull. The course of blood vessels, especially the meningeal arteries, the location of the diploic veins, the suture lines and pacchionian depressions can be seen on the X-ray films, and at times may be found very confusing, and must be differentiated from a fracture line.

Fractures of the spine, just as cranial fractures, are frequently over-looked and neglected. The final diagnosis in most cases will be made with the X-ray.

They derive their chief importance from the damage to the spinal cord and nerve trunks which frequently accompany them. In no type of injury is an early diagnosis more urgent. It is important to consider the history of the injury, which may be caused by a direct blow, though the more frequent cause of fracture of the vertebrae is indirect force producing either an acute hyperflexion of the spine, or rarely hyperextension. The indirect force causes a buckling forward of the spinal column, producing the so-called "Jack-knife" position, and may be applied by a heavy object falling from above and striking the head and shoulders, or by a jar transmitted from below by a fall on the feet. Fractures by muscular action alone are rare, though they may occur, particularly of the transverse and spinous processes. Several cases are on record where the body of the vertebra was fractured and compressed by muscular effort alone. Immediately following an accident if a patient is in acute shock it is imperative to treat the shock first, and we want to emphasize the great importance of not subjecting a patient while in this condition to the extra manipulation necessary to make proper X-ray examinations. If, in addition to the shock, the patient is unconscious or if movement causes severe

pain and there is hyperpyrexia or very rapid and embarrassed respiration, the patient should not be removed to the X-ray room for a Roentgen-ray study.

Judgment and experience and a careful study of each individual case must guide the attending surgeon in his handling of each injury, as no iron clad rules can be laid down. At times a valuable preliminary examination can be made with a portable or bedside X-ray machine, the use of which we have found to be of the greatest help.

It is essential that stereoscopic antero-posterior, lateral and frequently oblique films be taken on all cases of suspected spinal injuries. We particularly wish to stress the great value of the oblique or semi-oblique view, more especially in injuries of the cervical vertebrae. In our industrial work, very definite fractures, previously reported negative by other observers, have been found by a careful recheck and Roentgen-ray study with the oblique view, this type of fracture being impossible to demonstrate with a straight lateral or antero-posterior view.

If the roentgenolgist turns in a preliminary negative report and the patient continues to have clinical symptoms, we want to urge the referring surgeon to insist on another X-ray study. We want to emphasize the great importance of the roentgenologist covering not only the area in which the injury is suspected, but he should also examine both below and above the suspected involved area.

We have stressed fractures of the head and vertebrae because they usually give us the most serious trouble. However, injuries in many other parts of the body may also assume major importance. Fractures of the small bones of the wrist and foot can easily escape detection, and, if not diagnosed and properly treated, will cause prolonged disability.

To mention one case in particular, a fractured scaphoid and dislocation of the semilunar were not detected until several months after the injury. Treatment was instituted but the railroad employee was off from work for over a year.

Several views for fracture of the patella and os calcis should frequently be taken.

Epiphyseal injuries are most important and should be early diagnosed and promptly treated.

The necessity of frequent re-checks or X-ray examinations, following the various methods of treatment, is essential, first to determine the alignment and position of the fragments, and, second, to determine the process of repair and throwing out of callus, with or without delayed union. A modern fracture service demands prompt reports on the X-ray examination for the sooner the fracture is set the easier it will be.

We want to urge against the indiscriminate showing of films to patients. Often there is a good functional result obtained, when the anatomical result is not perfect.

The roentgenologist should be skilled and familiar with all branches of X-ray work, other than fractures or bone injuries. Only several days ago a male, age thirty, who had sustained an injury six months ago, falling fifteen feet, came into my office complaining of his head. To use his own description, "He had a sad head." Both he and his father and lawyer thought all his symptoms were due to his fall. Upon a complete negative X-ray of his spine and pelvis, we X-rayed his head and found definite involvement of his right antrum and ethmoids. A nose and throat specialist drained his antrum and treated his infected ethmoids. His fall of course had no connection with his present trouble.

A patient came in the hospital the other day with an injured shoulder, fractured through the tuberosities, with a portion of the left lung field showing on the film which looked like cancer. Further examination revealed extensive metastatic malignancy throughout both lungs, pelvis and lumbar vertebrae. Another injured shoulder "so-called," upon X-ray examination proved to be a calcified bursitis. An injured elbow in a carpenter proved to be a bone cyst.

To summarize:

1. The use of the X-ray is only a part, but a very important part, in the handling of injured patients.

2. We again want to emphasize the necessity of proper and thorough physical examinations by the attending surgeon before ordering an X-ray.

3. It is most important if a patient continues with clinical symptoms, even though the first X-ray examination was negative, to order another X-ray.

4. Numerous fractures may escape attention unless films are taken from a number of different views and angles.

5. The roentgenologist has a responsibility he

must not shirk, for his report should be accurate and dependable. Technicians are indispensable, but wherever possible a roentgenologist or qualified physician should see the patient and direct the X-ray examination with the exposure to be made.

6. The area X-rayed should cover not only the part injured but a considerable portion above and below the injured area. This is particularly true of injuries of the spine, where pain is referred below the site of the injury. A direct blow may not cause a fracture over the area struck, but some far removed area. For instance, a blow on the head with fracture of the vertebrae; a blow over the patella, with fracture of the femur; a fall, landing on the feet and os calces, with fracture of the shaft of the tibia, or fracture of the vertebrae.

Public Health Statistics

I. C. RIGGIN, M. D.
State Health Commissioner of Virginia

The communicable disease reports received at the office of Dr. G. F. McGinnes, State Epidemiologist, during the month of June, 1935, show the following cases compared with the same month in 1934:

	1935	*1934*
Typhoid and Paratyphoid Fever	55	57
Diphtheria	32	41
Scarlet Fever	90	69
Measles	1,171	3,762
Meningitis	38	13
Poliomyelitis	52	5
Rocky Mountain Spotted Fever	5	9
Typhus Fever	1	0
Undulant Fever	6	4
Tularaemia	4	4
Smallpox	0	1

Within the last six weeks there has been a definite increase in the incidence of the disease Acute Anterior Poliomyelitis in the State of Virginia. Because of this increased prevalence the State Department of Health has deemed it advisable to use every possible means to combat its spread by means of bulletins which will be dispatched at intervals to the physicians of the State in order that they may be kept posted as to the number of cases. In these bulletins methods of diagnosis, the use of convalescent serum, the importance of after-care, et cetera, will be discussed. Through the consulting diagnostic service established by the Department several years ago, aid will be given in the diagnosis of the disease when requested.

The State Department of Health has on hand an adequate supply of convalescent serum which is available to those physicians who wish to use it. However, in furnishing serum the Department guarantees nothing more than its sterility, holding out no surety as to its therapeutic value. On the contrary, what evidence there is available would strongly suggest that the serum while harmless, is of no value in the treatment of the disease, even in its pre-paralytic form.

On this subject we quote an editorial from a recent issue of the *New England Journal of Medicine:*

"As the next few months will inevitably witness a normal seasonal increase in the incidence of the disease, and may even see the unfolding of an epidemic that no one today can foresee, it is well that the medical profession should realize the limitations of a serum, the use of which is too often based on emotional rather than scientific grounds.

"With the attention given to infantile paralysis during and after the 1916 epidemic, it was devoutly to be hoped that some specific therapeutic agent might be found. For some years, the studies carried on in this State under the auspices of the Harvard Infantile Paralysis Commission offered encouragement to the belief that the serum, if used in the pre-paralytic stages, might be of some therapeutic value in minimizing the subsequent paralysis. Even through the 1931 epidemic individual instances were numerous in which favorable effects followed, and might therefore be due to the serum. Even these, however, were subject to the criticism provoked by a lack of control cases, for it was manifestly impossible to make certain that the treated cases had not been of milder type than those already paralyzed and therefore not treated. Studies in other States, where serum was not so readily available and where more skepticism existed as to its value, showed beyond dispute that when the value of serum was measured by comparison with a control group of alternate cases, no scientific evidence could be brought forward to support the belief in its efficacy.

"Thus were shattered our hopes that convalescent serum might serve as a specific therapeutic agent.

It is safe to say that in its continued use today, the physician is merely hoping against fact that his particular case will in some way show some improvement that may be attributed to the serum. In the absence of any other specific therapy, and keeping in mind the popular hysteria with respect to the disease, the use of the serum is not greatly dissimilar to the drowning man's frantic grasp at a passing straw. The most that can be said for the serum is that its use may to a certain degree allay popular panic, and give to the victim's parents a measure of comfort in the thought that something tangible is being done. Beyond this it is apparently of little value. It is to be hoped that the medical profession in its proper eagerness to afford to its patients every possible aid to recovery, will not lose sight of the real facts as to the value of convalescent serum."

In furnishing this serum the State Department of Health is thus departing from its established policy of distributing only biologics and pharmaceuticals of unquestioned value. Because there is some evidence that the serum is of value as a preventive agent, the serum is available not only in 25 c.c. ampules for those who wish to use it therapeutically but it is also put up in 10 c.c. ampules to be used as a preventive where there has been a definite history of exposure to the disease.

Woman's Auxiliary to the Medical Society of Va.

President—MRS. JOSEPH BEAR, 3012 Monument Ave., Richmond.
President-elect—MRS. FLETCHER J. WRIGHT, Petersburg.
Recording Secretary—MRS. JAMES B. STONE, 2042 Park Ave., Richmond.
Corresponding Secretary—MRS. AMBROSE MCGEE, 4107 Kensington Ave., Richmond.
Treasurer—MRS. REUBEN F. SIMMS, 2034 Park Ave., Richmond.

Report of the National Auxiliary Meeting.

The annual meeting of the Woman's Auxiliary to the American Medical Association was held in Atlantic City, N. J., June 9-14, 1935, at the Traymore Hotel, with the wives of the Canadian Medical Association as our honored guests.

Sunday evening and Monday, the National Board was in session at which time Virginia was represented by our able and enthusiastic President, Mrs. Joseph Bear.

The General Meeting of the Auxiliary opened Tuesday at nine A. M. with the National President, Mrs. Robert W. Tomlinson, presiding. The usual order of business was followed, with reports from all standing committees and the roll call of the States. Some of the outstanding points from the committee reports were as follows:

ORGANIZATION COMMITTEE: The Chairman reported two new States organized, New York and North Dakota. The National Auxiliary now has a total membership of 15,692 which is an increase of 1,144 over 1934. Texas had the most new counties organized but Wisconsin had the most new members for the past year.

PROGRAM COMMITTEE: The Chairman reported many States doing outstanding work along public relations, health radio talks and around health examinations for high school and college students as well as younger children.

HYGEIA COMMITTEE: The Chairman reported an increase in circulation of 2,138 copies with Wisconsin leading with 1,139 subscriptions; thirty-eight States reported and eighteen States increased their subscriptions for 1934.

EXHIBIT COMMITTEE: The Chairman reported that twenty-six States sent exhibits which proved very interesting. Exhibits ranged from scrap-books and baby layettes to a most interesting collection of very old medical instruments and the evolution of nursing history in the form of dolls dressed to represent the different phases and periods of nursing.

Tuesday's session closed with recommendations from the National Board.

Wednesday, June 19, the major part of the session was given to hearing States' reports, which proved both interesting and inspiring. There are forty-three States organized and thirty-seven reports were read. All States reported the general lines of welfare, health education work and legislative work. Two of the newest projects were setting aside an annual Doctor's Day to commemorate the work done by doctors and every State giving special attention to Mother's Day.

Wisconsin should receive special commendation since they had 100 per cent increase in membership, led in *Hygeia* subscriptions and succeeded in using

their influence to have all advertised medicine taken off of the radio in their State and furnished our most promising and efficient President-Elect, Mrs. Robert Fitzgerald.

The Chairman of registration and credentials reported 1,431 women registered with forty-seven Canadian guests.

Mrs. Rogers N. Herbert, of Tennessee, was introduced as the new President and was presented with the gavel and President's pin.

The entertainment side of the convention was splendidly arranged by the committee in charge. With dinners, luncheons, musicales, teas and receptions, there was not a leisure moment.

We all left Atlantic City with a desire to linger but with the hope of meeting in Kansas City in 1936. Why not plan now to go to Kansas City next June and catch some of the vim, vigor and enthusiasm of other State Auxiliaries?

(MRS. REUBEN F.) ANNIE P. SIMMS,
Delegate.

Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted by the Council on Pharmacy and Chemistry of the A. M. A.:

Abbott Laboratories
Abbott's Cod Liver Oil.
Hynson, Westcott & Dunning
Surgical Solution of Mercurochrome—H. W. & D.
Lederle Laboratories, Inc.
House Dust (New York Apartment House), Allergenic Extract—Lederle.
Merck & Co., Inc.
Aminoacetic Acid—Merck.
Parke, Davis & Co.
Antipneumococcic Serum (Felton), Types I and II Refined and Concentrated.
E. R. Squibb & Sons
Soluble Gelatine Capsules Squibb Stabilized Halibut Liver Oil.
Soluble Gelatine Capsules Squibb Stabilized Halibut Liver Oil with Viosterol.

ACCEPTED DEVICES FOR PHYSICAL THERAPY

The following apparatus has been accepted by the Council on Physical Therapy of the American Medical Association for inclusion in its list of accepted devices for physical therapy:

Victor Electrosurgical Machine.—This device is recommended for electrosurgery only. The frequencies are well above neuro-muscular response. The efficiency varies from 8 to 30 per cent, depending on the conditions. The high frequency power generated varies from 46 to 177 watts for the "scalpel" connection and from 15 to 90 watts for "coagulation." General Electric X-Ray Corporation, Chicago. (J. A. M. A., June 15, 1935, p. 2186.)

Inductotherm.—The purpose of this short wave diathermy machine is to administer therapeutic heat to the body tissues, thus producing a heating effect comparable to that of diathermy. Conventional electrodes are not used, and no metal to skin contact is made with the patient. Burns are possible with this machine, but the chances of burns are less than for conventional diathermy. General Electric X-Ray Corporation, Chicago. (J. A. M. A., May 11, 1935, p. 1705.)

Elliott Treatment Machine.—An electrical machine recommended for applying heat therapy for the treatment of inflammatory diseases of the pelvis. Treatment is accomplished by prolonged and sustained application of heat. Hot water, the temperature of which may be controlled by the physician, is circulated through anatomatically shaped, distensible applicators made of latex. The unit was found to give good service in the conditions recommended, such as inflammatory diseases of the pelvis attended by pain, backache, menstrual irregularities and chronic exhaustion. Manufactured for and distributed by the Treatment Regulator Corporation, Detroit, and the A. S. Aloe Company, St. Louis. (J. A. M. A., May 18, 1935, p. 1823.)

Book Announcements

New Books in the Library of the Medical College of Virginia.

The following and other books may be borrowed from the Library by members of the Medical Society of Virginia, the only charge being return postage:

Adams, E. W.—Recent researches on the nature and therapy of pernicious anemia.
Agard, Walter—Medical Greek and Latin at a glance.
Amelink, F.—Schema zur mikrochemischen identifikation von alkaloiden.
American Medical Association—Hospital practice for interns.
American School and University, 7th edition.
Bartlett, F. C.—The problem of noise.
Berglund, Hilding and Medes, Grace—The kidney in health and disease.
Berman, Louis—The glands regulating personality.
Black, C. E.—Names of surgical operations.
Brunt, David—Combination of observations.
Clark, Kenneth—A catalogue of the drawings of Leonardo da Vinci.

Lewis, Sir Thomas—Clinical science.
Conklin, Edmund S.—Principles of adolescent psychology.
Crane, George W.—Psychology applied.
Department of scientific and industrial research. Report for 1933-34.
Dobson, J. O.—Ronald Ross: Dragon-slayer.
Dorcus, Roy M., and Shaffer, G. Wilson—Textbook of abnormal psychology.
Fishman, Joseph F.—Sex in prison.
Fracastoro, Girolamo—Frascator: Syphilis or the French disease.
Franklin, Edward C.—The nitrogen system of compounds.
Gervais, Alfred—A surgeon's China.
Goepp, R. M.—Dental state board questions and answers.
Goodenough, Florence L.—Developmental psychology.
Haldane, J. B. S.—Human biology and politics.
Harding, T. Swann—The popular practice of fraud.
Harrington, Milton—Wish-hunting in the unconscious.
Harrow, Benjamin, and Sherwin, C. P.—Textbook of biochemistry.
Jarcho, Julius—Posture and practice during labor among primitive peoples.
Kuechle, B. E.—Symposium on silicosis.
Kuno, Yas—The physiology of human perspiration.
Landon, John F., and Smith, L. W.—Poliomyelitis.
Leakey, L. S. B.—Adam's ancestors.
Loeb, Harold and Associates—The chart of plenty.
Luck, J. Murray—Annual review of biochemistry, 1935.
Meaker, S. R.—Human sterility.
Mellanby, Edward—Nutrition and disease.
Miller, Richard H.—Tuberculosis of the lymphatic system.
Monroe, Margaret T.—Breaking out of prison.
Murchison, Carl—A handbook of social psychology.
Nicholson, D.—Laboratory medicine.
Novak, Emil—The woman asks the doctor.
Parsons, T. R.—Hints on taking notes at lectures.
Patterson, A. M.—German-English dictionary for chemists.
Reports on public health and medical subjects, No. 71.
Rietz, H.—Mathematical statistics.
Scott, H. Harold—Some notable epidemics.
Springstun, H.—Doctors and juries.
Watson, Frederick—The life of Sir Robert Jones.
Wells, H. Gideon—Chemical aspects of immunity.

Emotions and Bodily Changes. A Survey of Literature on Psychosomatic Interrelationships, 1910-1933. By H. FLANDERS DUNBAR, M. D., Ph. D., Departments of Medicine and Psychiatry, Columbia University. Published for the Josiah Macy, Jr., Foundation, by Columbia University Press. New York, 1935. Octavo of xv-595 pages. Cloth. Price, $5.00.

It is only recently, as the history of medicine reveals, that much attention has been devoted to the scientific study of emotion and of the bodily changes that accompany diverse emotional experience.

In this book, the author, covering the medical literature of 1910-33, brings out clearly that "many physiological processes which are of profound significance for health, not only of the individual but also of the group, can be controlled by way of the emotions." This knowledge can be of great assistance in the prevention and treatment of illness, yet few know how to use it.

According to various medical authors quoted, 40 to 50 per cent of the problems of the acute stages of a somatic illness and from 50 to 75 per cent of the difficulties of convalescence have their primary origin in the mind rather than the body of the patient.

Reviewing further the medical literature on the subject the author finds three distinctly different attitudes among practicing physicians toward the relationship of mind and body in acute and chronic illness:

(1) Those who attempt to find an organic condition to account for every mental state.

(2) Those who see only the mental and overlook the organic.

(3) Those who see organic as well as psychic pathology from a psychosomatic point of view. (This last approach might be termed the psychobiologic, determined by the newer understanding of the organism as a whole.)

As the author states, this book "represents an attempt to bring together in some sort of perspective the research material which has combined to develop those concepts in medicine which are the necessary foundations for further research in the sphere of psychosomatic problems."

The volume is especially commended to the attention of all who are interested in obtaining a knowledge of physical-mental relationships as an aid to therapeutic procedures.

HARVIE DEJ. COGHILL, M. D.

Virginia Medical Monthly

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Editorial

Gentlemen from Virginia.

The American Medical Association the other day made another Virginia-born doctor its president-elect. This time it was James Tate Mason who received the honor. Dr. Mason first saw the light of day in Orange County, Virginia, May 20, 1888, where his father long practiced medicine. He himself took his medical degree from the University of Virginia and shortly afterward moved to the great Northwest. Since that time he has figured as a medical luminary in Washington, the state of his adoption. It is a coincidence that Dr. Mason's immediate predecessor in office, James S. McLester, a native of Alabama and the present president of the Association, also received his medical education at the University of Virginia.

All of this recalls the fact that the first president of the American Medical Association, Nathaniel Chapman, eminent editor, author and professor of Philadelphia, was born in Fairfax County, Virginia; that the fifth president of the Association was Beverley Randolph Wellford of Fredericksburg and Richmond; that the fortieth president, A. Y. P. Garnett, C. S. A., prominent physician of the District of Columbia, and personal physician to President Davis and General Lee during their Civil War residence in Richmond, was born in Essex County, Virginia; that the forty-first president, William Wirt Dawson, distinguished teacher and surgeon in Cincinnati a generation ago, was born in Berkeley County, Virginia; that the forty-fifth president was our own Hunter McGuire; and that the forty-ninth president, Richard Beverley Cole, Gold Rusher of the early fifties and later leading obstetrician and gynecologist of California, was born in Manchester, Virginia.

It is noteworthy that only Wellford and McGuire were at work in the state at the time of their election to the presidency of the American Medical Association. It has been forty-three years since a Virginia doctor has won this high office. We can only take comfort in the repeated instances in which the distinction has come to Virginia's sons who were born and bred in the Old Dominion.

Broders and His Work.

We are glad to have Dr. Albert C. Broders, formerly Division Head of the Department of Surgical Pathology at the Mayo Clinic, back in Virginia. He is a native of Fairfax County and a graduate of the Medical College of Virginia. He will become Director of Cancer Research in his alma mater and will assume charge of the Department of Surgical Pathology. Dr. Broders' best known contribution to medicine is perhaps in the grading of malignant growths. The possibility of variability in malignancy of cancer has long been known. In fact for many years it has been pretty well recog-

nized that the type of cancer, as well as its localization, were important factors in arriving at some idea concerning its malignancy. But it is only within recent years that cytologic investigations have led to what appears to be a more serviceable method of grading malignancy. In this advance Broders has been a pioneer, pointing out the absolute necessity on the part of the surgical pathologist of being "familiar with the biological status of the cells of the cancer to be graded," being able to distinguish certainly between differentiated and undifferentiated tumor cells. The grading of cancers has been facilitated by a numerical expression of the relation of these differentiated cells to those which are undifferentiated, grades 1, 2, 3, 4, indicating an ascending scale of malignancy. A proper sort of pathological report should give not only a morphological classification but also a grading by the method adopted and popularized by Broders, for as he has pointed out the grading of cancer not only has prognostic value, but may also prove of vast assistance to the surgeon in determining what operative procedure is indicated.

The Surgical Treatment of Hypertension.

The outlook in the severer grades of essential hypertension has been generally regarded as serious, the patient rarely living longer on an average than eighteen months after the diagnosis has been established. This type of hypertension may therefore be considered as grave a clinical problem as cancer, and any measure, however heroic, which offers promise of curing it or even of abating its rapid progress is to be considered. Recently two important reports concerning the surgical treatment of hypertension have been made. The first was contributed by George E. Brown, Winchell McK. Craig, and Alfred W. Adson and appeared in a recent issue of *Minnesota Medicine*. The other was presented at the Atlantic City meeting of the American Medical Association by Max M. Peet. From the Minnesota workers we learn that bilateral rhizotomy, usually from the sixth thoracic to the second lumbar, may be productive in suitable cases of astonishing results. Patients who have complained of headache, dizziness and visual disturbances experience great relief. Inordinately high blood pressures show sharp falls—in one instance the systolic drop was more than 100 m.m. of mercury, although the mean value usually varies between 35 and 100 m.m. of mercury. There are also interesting concomitant physiological changes, such as diminished variability of blood pressure readings, reduction of the vasopressor response to cold, rises in blood pressure on assuming the recumbent posture, and delayed water excretion. Untoward effects have been recorded as loss of sweating below the level of the diaphragm, pain in the lower extremities, loss of strength in the legs and weakness of the abdominal muscles.

Unfortunately all cases of essential hypertension do not appear to respond favorably to resection of spinal nerve roots. Those cases in which failure has attended the operation are probably complicated by extensive changes in the arterioles. It is for this reason that selection of cases has to be carefully carried out. All of the criteria have not yet been established, though the age of the patient, the duration of the disease, the function of the kidney, "the cold test," as well as the emotional response have to be carefully considered. Biopsy for a suitable specimen of muscle in which the arterioles may be studied should form a part of the preliminary study of the patient. Brown and his co-workers report one case in which four years after operation the lower levels of blood pressure were still maintained.

The Carrier of Poliomyelitis.

No one would go or carry children, especially those under fifteen years of age, into an area where the incidence of poliomyelitis was high. No one would question the properiety of quarantining the acute case, or of sending other children of the household to a safe distance, nor would one question the wisdom of protecting children from the convalescent case well beyond the present recognized stage of contagiousness. There are possibly few who, in the presence of an epidemic, would object to viewing every case of acute upper respiratory disease and every case of acute gastro-intestinal upset as possibly an abortive case of poliomyelitis. But probably too little attention has been paid to the rôle of the so-called healthy carrier—the individual who has had varying degrees of contact with an active case, presents no symptoms himself, and without knowing it, goes about spreading the disease to susceptible individuals. That such healthy carriers exist has been repeatedly shown by the experimental work of numerous investigators who have demonstrated by the inoculation of animals the presence of the virus in naso-pharyngeal washings. Lucas and Osgood in

this way produced the disease in a monkey "four months after a second attack and two years and three months after his first attack." That such healthy carriers exist has also been shown by epidemiological investigations clearly tracing one acute case to another at a widely distant point by way of such a carrier.

What public health measures are effective in arresting the spread of this disease remain yet to be demonstrated. The identification and control of the abortive case, believed to be about four times as numerous as the frank paralytic case, is a baffling problem. It is exceeded in complexity only by the difficulty of recognizing and controlling the healthy carrier. It is apparently not practical at present by cultural or inoculation methods to identify the healthy carrier. Only by the human tragedy he leaves in his wake can we now sense his presence. Until public health students throw more light upon this whole subject our course as physicians becomes one of warning against the frequence and danger of abortive cases and the necessity for their quarantine and it becomes incumbent upon us to regard every contact with an acute case of poliomyelitis as a potential carrier who should be shunned like the plague by all who are susceptible.

Can Summer Hay Fever Affect the Incidence of Winter Colds?

The Medical Society of the State of New York in a recent news release from its Public Relations Bureau calls attention to what appears to be an important observation:

"That people who suffer from hay fever in summer are more susceptible than others to common colds in winter, but if treated with pollen extract for hay fever they show greater immunity to colds later." This statement was made by Dr. Louis Sternberg as a result of observations over a period of six years among patients at Beth Israel Hospital.

His report, published in the July 15th issue of the *New York State Journal of Medicine,* says in part: "The author has reviewed the histories of 200 treated cases of hay fever observed from one to six years, and finds that fifty-three gave a previous history of frequent colds usually in winter. After their first seasonal or perennial course of treatment with pollen extract, thirty-six of the fifty-three stated that they had been relieved of head colds throughout the winter months following their treatments. Of this total number, twenty-five were sensitive to ragweed, eight to timothy, and three to both ragweed and timothy. The seventeen cases not relieved of winter colds did not have much relief from the pollen injections."

"The reason, " states Dr. Sternberg, "for this apparent immunity to the infection known as the common cold is not now known. It is presented as a clinical fact that remains to be explained. That those suffering from hay fever or asthma are generally more subject to upper respiratory infections than other individuals is a well-known fact, but few among the numerous publications on the 'common cold' have ever mentioned how these colds are influenced by pollen treatment in hay fever subjects."

The question which this report raises is whether or not the incidence of pneumonia, recognized so frequently as a sequel of the common cold, can be affected by the proper treatment of hay fever. About 100,000 Americans die annually from pneumonia. The disease ranks third among the causes of death, being exceeded only by heart disease and cancer. Any preventive measure, therefore, which offers the least hope of reducing this high mortality deserves more than passing notice.

Department of Clinical and Medical Education of the Medical Society of Virginia

The third of the postgraduate clinics in Pediatrics conducted during the year by this Department was sponsored by the Northampton-Accomac Medical Societies. The meetings were held in the Northampton-Accomac Memorial Hospital and were under the direction of Dr. George M. Lyon, specialist in Pediatrics, of Huntington, W. Va. The meetings were held daily and began July 8th and con-

tinued through July 19th. The following doctors were in attendance:

Dr. S. K. Ames
Dr. C. E. Critcher
Dr. J. L. DeCormis
Dr. H. L. Denoon
Dr. C. M. Easter
Dr. J. F. Edmonds
Dr. W. T. Green
Dr. J. R. Hamilton
Dr. W. C. Henderson
Dr. G. W. Holland
Dr. J. W. Jackson
Dr. J. M. Lynch
Dr. E. H. Trower
Dr. Rooker White
Dr. A. F. Wood

The fourth postgraduate clinic in Pediastrics began July 22nd in Norfolk and is being sponsored by the Norfolk County Medical Society. The meetings are being held daily from four to six in the King's Daughters Clinic Building and will continue for two weeks. Enrollments will be reported in the next issue of the MONTHLY.

The Christiansburg postgraduate clinic in Pediatrics, under the direction of Dr. Samuel F. Ravenel, of Greensboro, N. C., has completed its meetings.

Clinics for Negro Physicians.

The annual postgraduate clinics for Negro physicians, given under the auspices of the Medical College of Virginia, were held at St. Philip Hospital, Richmond, the last two weeks in June, with an enrollment of forty-one. While the majority of these were from Virginia, there were several from other states. Dr. Lee E. Sutton, dean of the Medical School, was director of the clinics and was assisted by members of the college faculty.

GEORGE B. ZEHMER,
Executive Secretary.

Proceedings of Societies

Virginia State Board of Medical Examiners.

Of the total number of applicants before the meeting of the Virginia State Board of Medical Examiners, June 19th-21st, there was only one failure. There were 110 successful applicants, including twelve by reciprocity. Following is the list of those granted certificates:

Dr. Benjamin R. Allen, Richmond, Va.
Dr. John E. Alexander, Norfolk, Va.
Dr. John William Ashworth, Jr., Coeburn, Va.
Dr. William E. Apperson, University, Va.
Dr. William Bennett Bean, University, Va.
Dr. Charles Lewis Bittinger, Bunker Hill, W. Va.
Dr. Charles Atlas Bland, Clover, Va.
Dr. George S. Bowers, Richmond, Va.
Dr. Richard B. Bowles, Clifton Forge, Va.
Dr. Robert Dwight W. Brown, Woodstock, Ill.
Dr. Alexander G. Brown, III, Richmond, Va.
Dr. William W. Butzner, Fredericksburg, Va.
Dr. George M. Caldwell, Radford, Va.
Dr. Sheldon David Carey, Roanoke, Va.
Dr. Hugh Tucker Chelf, Jr., Culpeper, Va.
Dr. William H. Chapman, Jr., Smithfield, Va.
Dr. David Stanford Clayman, Martinsville, Va.
Dr. William Malvern Clopton, St. Louis, Mo.
Dr. George Cooper, Jr., Louisville, Ky.
Dr. Kenneth Cooper, Lynchburg, Va.
Dr. Howard Harman Curd, Seattle, Wash.
Dr. Richard A. Cupaiuoli, Hoodcliff-on-Hudson, N. J.
Dr. Margaret DeRonde, University, Va.
Dr. Harvey M. Diggs, Suffolk, Va.
Dr. Joseph M. Dixon, Roanoke, Va.
Dr. Lester Edwin Dunman, Mullens, W. Va.
Dr. Charles H. Eller, University, Va.
Dr. Samuel L. Elfmon, Fayetteville, N. C.
Dr. Carroll E. L. Esterday, Union Bridge, Md.
Dr. Edwin P. Ewers, Pittsburg, Pa.
Dr. Frank W. Foote, University, Va.
Dr. Hunter B. Frischkorn, Jr., Richmond, Va.
Dr. James Quincy Gant, Richmond, Va.
Dr. Romeo Joseph Gentile, Suffolk, Va.
Dr. George Adrian Glass, Richmond, Va.
Dr. H. Aurelia Gill, Richmond, Va.
Dr. William L. Griggs, Jr., Pennington Gap, Va.
Dr. James Martin Habel, Jr., Jetersville, Va.
Dr. Paul Burns Haggland, Seattle, Wash.
Dr. John D. Hamner, Jr., Richmond, Va.
Dr. Herman Henry Hines, Bristol, Va.
Dr. Beverly Long Holladay, Suffolk, Va.
Dr. Charlton G. Holland, Jr., Danville, Va.
Dr. Max Leonard Holland, Chattanooga, Tenn.
Dr. Edward Lee Hopewell, Washington, D. C.
Dr. Floyd Kinzer Hurt, Marion, Va.
Dr. Harold Maurice Jackson, Leesburg, Va.
Dr. Edward V. Jones, Jr., Hampton, Va.
Dr. Charles E. Jenkins, Baltimore, Md.
Dr. Joseph John Kanich, Danville, Va.
Dr. Nathaniel T. Keys, Cornwall, N. Y.
Dr. Robert C. Keys, Staunton, Va.
Dr. Alfred L. Kruger, Norfolk, Va.
Dr. Esta Joyce Levy, Suffolk, Va.
Dr. Rector Sells LeGarde, Damascus, Va.

Dr. Claude Marshall Lee, Jr., Cincinnati, O.
Dr. Maynard Herman Law, Roanoke, Va.
Dr. Edmund Moseley LaPrade, Richmond, Va.
Dr. Alter Laibstain, University, Va.
Dr. Byrd Stuart Leavell, Culpeper, Va.
Dr. Albert Emanuel Long, University, Va.
Dr. Louis Lovenstein, Richmond, Va.
Dr. Albert Benjamin McCreary, Eastville, Va.
Dr. John Fulton McGavock, University, Va.
Dr. Francis Henry McGovern, Danville, Va.
Dr. William P. McGuire, Baltimore, Md.
Dr. John O. McNeel, University, Va.
Dr. Brooke Baylor Mallory, Roanoke, Va.
Dr. William H. Matthews, Dante, Va.
Dr. Sam Milchin, Richmond, Va.
Dr. Jerome Natt, Roanoke, Va.
Dr. James Talton O'Neal, Amelia C. H., Va.
Dr. Boyd Hawthorne Payne, Dallas, Texas.
Dr. James B. S. Perrow, Altavista, Va.
Dr. William Thomas Pyles, Roanoke, Va.
Dr. Reno Russell Porter, Madison, Wis.
Dr. Dupert W. Powell, Roanoke, Va.
Dr. Jesse J. Porter, Louisa, Va.
Dr. Albert George Rawlins, Portsmouth, Va.
Dr. Welford C. Reed, Richmond, Va.
Dr. Edison E. Ritter, Salem, W. Va.
Dr. Harwood Hugo Ritter, Charlottesville, Va.
Dr. Mason Cole Rowe, Charlottesville, Va.
Dr. William V. Rucker, Bedford, Va.
Dr. Ulvert Ottway Sanders, Hurley, Va.
Dr. Eugene B. Shepherd, Richmond, Va.
Dr. Hyman Rock Sheintock, Richmond, Va.
Dr. James B. Shuler, Shenandoah, Va.
Dr. John R. Saunders, Richmond, Va.
Dr. Hack U. Stephenson, Jr., Richmond, Va.
Dr. Anna Theresa Swing, Richmond, Va.
Dr. William L. Taliaferro, Hampton, Va.
Dr. Waller Littlepage Taylor, Jr., Norfolk, Va.
Dr. Clarry Clyde Trice, Richmond, Va.
Dr. James Carl Trivett, New Orleans, La.
Dr. William R. Tyson, Norfolk, Va.
Dr. Leo Louis Tylec, Hartford, Conn.
Dr. Lewis Alexander Vance, Wabah, Mass.
Dr. Roland Harris Vaughan, Cardwell, Va.
Dr. Angelo Joseph Villani, New Haven, Conn.
Dr. Thomas Duval Watts, Richmond, Va.
Dr. Harold Wayne Ward, Clay, W. Va.
Dr. William R. Watkins, Halifax, Va.
Dr. Arthur Weinberg, New York, N. Y.
Dr. George Clegg Williams, Coeburn, Va.
Dr. Varl Louis Wilson, University, Va.
Dr. Washington C. Winn, Richmond, Va.
Dr. Martin R. Wisely, University, Va.
Dr. Herman Wolff, Lynchburg, Va.
Dr. William Swope Wray, University, Va.

In addition to this list there were five osteopaths granted licenses, four on the basis of examination and one by reciprocity.

The Northampton County Medical Society

Held its regular quarterly meeting on July 3rd, at which time Dr. G. W. Brown, of the Eastern State Hospital, was the chief speaker. He differentiated quite clearly between those mental cases requiring ordinary hospital care and those requiring confinement in an institution.

Three censors were elected for the Society in addition to the officers previously named. They are Dr. G. W. Holland, Eastville, Dr. S. K. Ames, Cape Charles, and Dr. W. J. Sturgis, Nassawadox. Delegate and alternate to the State Society meeting at Norfolk in October were also elected at this time.

The Society gave its unanimous approval to a plan of Hospital Insurance contemplated by the Northampton-Accomac Memorial Hospital. (The plan had been approved individually by the doctors in Accomac County.)

The Medical Societies of Northampton and Accomac Counties are jointly sponsoring a postgraduate course in Pediatrics to be held at the Hospital, July 8th to 19th, inclusive, under the direction of Dr. George M. Lyon.

W. CAREY HENDERSON, *Secretary.*

The Patrick-Henry Medical Society

Held its regular quarterly meeting at Patrick Springs, Va., July 11th. The members and their families had dinner at the hotel preceding the meeting. The program of the meeting consisted of case reports by six of the members, following which there was a general discussion. Dr. F. B. Teague, Martinsville, president, presided.

Delegates and alternates to the State Society meeting in Norfolk were elected at this time.

The next meeting is to be held in October, at Martinsville, Va.

C. R. TITUS, *Secretary.*

The Halifax County Medical Society

Held its regular meeting at South Boston on July 11th, with the president, Dr. I. Keith Briggs, presiding. Papers were presented by Dr. C. C. Steelsmith, head of the Halifax-Pittsylvania Health Department, Dr. C. B. White, Halifax, and Dr. W. C. Brann, South Boston.

Dr. Lloyd Eastlack, South Boston, was elected president for the coming year; Dr. L. H. Hoover, Clarksville, vice-president; and Dr. Wm. C. Brann, South Boston, was re-elected secretary-treasurer.

The Fauquier County Medical Society

Met at Warrenton, Va., July 8th, with Dr. Richard Mason presiding. The delegate and alternate to the State Society were named and the following officers elected and installed: President, Dr. Richard Mason, The Plains; vice-presidents, Drs. George H. Davis and J. E. Knight, both of Warrenton; and secretary and treasurer, Dr. Martin B. Hiden (re-elected), also of Warrenton.

In accordance with a request from the President of the Woman's Auxiliary to the Medical Society of Virginia, it was unanimously voted that an Auxiliary to the Fauquier County Medical Society be formed and a committee was appointed to perfect this organization.

Matters of local interest were also discussed at this meeting.

Lee County Medical Society.

At the meeting of this Society on July 15th, Dr. W. J. Innes, Pennington Gap, was re-elected president and Dr. J. B. Muncy, also of Pennington Gap, was re-elected secretary-treasurer. Dr. W. L. Griggs and Dr. B. C. Grigsby were elected members of the Society.

The Bedford County Medical Society

Held its regularly quarterly meeting at Tanglewood Inn., Bedford, on the night of July 15th, this being a social meeting. The after-dinner program consisted of a showing of films on health work and surgery by E. G. Tice, and a reading by Miss Ruth Wyles, of Abingdon. Those present included Dr. and Mrs. T. P. West, Dr. and Mrs. C. H. Bondurant, Dr. and Mrs. E. L. Johnson, Dr. and Mrs. J. A. Rucker, Dr. and Mrs. M. P. Rucker, Dr. and Mrs. B. A. Rice, Dr. and Mrs. J. G. Leech, Dr. and Mrs. H. R. Hartwell, Dr. James P. Scott, Dr. and Mrs. Turner, Dr. and Mrs. F. G. Repass, Dr. and Mrs. G. W. Parker, Dr. and Mrs. S. K. Wallace, and several other guests.

The Southside Virginia Medical Association

Held its quarterly session at Lawrenceville on June 11th, with Dr. S. E. Gunn, of Hopewell, in the president's chair. Papers were read by Drs. Paul D. Camp, Oscar L. Hite, Thomas Wheeldon, and Frank S. Johns, of Richmond; Dr. S. E. Gunn, of Hopewell, and Dr. M. H. Todd, of Norfolk. A business session followed after which there was a buffet supper at the Windsor Hotel.

News Notes

Advances in Obstetrics and Gynecology.

In the July issue of the MONTHLY we published a page giving replies received to time of publication from a number of obstetricians and gynecologists on "What do you consider the three most significant advances in the field of obstetrics and gynecology during the past ten years?" The following answers received since that time should add to the interest of that page:

1. Organized prenatal care.
2. Hospitalization.
3. Compulsory consultation in abnormal cases.

Carl H. Ill, Newark, N. J.

1. A mask that covers the mouth and nose should be worn by all attendants during active labor.
2. The prevention of congenital syphilis.
3. Providence is a safe obstetrician in the great majority of cases.

James R. McCord,
Emory University School of Medicine,
Atlanta, Ga.

1. Increased efficiency in preventing complications of pregnancy and labor.
2. Increased knowledge of sexual physiology and pathology, leading to decrease in ineffective operations.
3. Creating foundation for rational treatment, decreasing operative mortalities.

Willard R. Cooke, Galveston, Texas.

1. The Aschheim-Zondek test.
2. X-ray pelvimetry.
3. The active principle of ergot.

James Raglan Miller, Hartford, Conn.

The Norfolk Meeting

Of the State Society is less than three months off. Plans are in the making for an interesting and pleasant meeting there as always. A good attendance is expected and we urge members to make hotel reservations as soon as possible to insure being in the location of choice. The Norfolk hotels are the Monticello, Southland, Fairfax, Atlantic, Lorraine, and the rates range from $2.00 a day and up.

In the July issue we gave names of our two special guests. The symposium has been selected with a view of having a subject of very general interest and is on treatment of some common diseases, subdivided as follows:

(a) Treatment of Acute Respiratory Diseases by Dr. F. C. Rinker, Norfolk;
(b) Treatment of Acute Infections of the Upper Urinary Tract by Dr. Joseph F. Geisinger, Richmond;
(c) A More Rational Treatment for the Mental Patient by Dr. H. C. Henry, Petersburg; and
(d) Treatment of the Toxemias of Pregnancy by Dr. T. J. Williams, University.

These papers and the discussion of them should furnish something of interest for every member of the Society.

In June, cards were sent all members requesting that those desiring to present papers at the meeting send titles with abstracts. Please bear in mind that August 20th is the dead line set for the receipt of these.

In the business sessions there will be a discussion of matters of interest to all members. Local societies are asked to elect their delegates and alternates and send names to the Secretary of the Society at 1200 East Clay Street, Richmond, as soon as possible. We want a large representation and are counting on the cooperation of each member.

Have You Returned Your Questionnaire?

A month ago, a questionnaire was sent all members of the Society by the President and the Committee on Medical Economics of the Society, to secure an opinion from the doctors of the State as to the distribution and adequacy of medical care in the State, and to ascertain the sentiment of Virginia doctors as to what, if anything, should be done in this matter. From the answers received, the Committee will formulate its report to be presented to the House of Delegates at our Norfolk meeting.

Have you filled out and returned your questionnaire? If not, please look it up and return today.

Married.

Dr. Oliver Allison Ryder, Alexandria, Va., and Miss Elinor Temple Hill, Richmond, Va., July 6th.

Dr. Fletcher Johnston Wright, Jr., formerly of Petersburg, Va., but now of Princeton, W. Va., and Miss Martha Jeanette Andrews, Lynchburg, Va., June 29th. Dr. Wright graduated from the University of Virginia in 1934 and interned at the University of Virginia Hospital.

Dr. Charles Roy Hoskins, formerly of Saluda, Va., but now of Athens, Ohio, and Miss Virginia Eubank Segar, Saluda, Va. Dr. Hoskins is a member of the class of '27, Medical College of Virginia, and has recently served a residency at the Manhattan Eye, Ear and Throat Hospital in New York City.

Dr. Charles Morris Nelson and Miss Charlotte Mercer Purcell, both of Richmond, Va., July 16th. Dr. Nelson is a member of the class of '32, University of Virginia, and is at present serving as an assistant resident in surgery at the Medical College of Virginia Hospital Division.

Dr. Charles Neil Eckerson, class of '35, Medical College of Virginia, and Miss Susan Elizabeth Henderson, Milford, Va., June 15th. Dr. Eckerson was formerly of Charleston, W. Va., and is now interning at Holy Name Hospital, Teaneck, N. J.

Dr. Clarence Ivanhoe Butte, Jr., Matoaka, W. Va., and Miss Ruby Binford Hudson, South Hill, Va., June 15th. Dr. Butte graduated from the Medical College of Virginia last year and interned for the past year at the Bluefield Sanatorium, Bluefield, W. Va. He will be located for practice at Maybeury, W. Va.

Dr. Lewis Littlepage, Jr., Norfolk, Va., and Miss Eleanor Mattingley, Remington, Va., June 29th. Dr. Littlepage is a graduate of the University of Virginia, in 1934, and served his internship at the University Hospital. He will be located in Norfolk, Va.

Dr. Virgil Leonidas Kelly, of the staff of the Blue Ridge Sanatorium, Charlottesville, Va., and Miss Alberta Worrell, of Otey, Va., June 11th.

Dr. Wycliffe Charles Jackson, class of '28, Medical College of Virginia, now of Jenkinjones, W. Va., and Miss Mary Stuart McCallum, Rowland, N. C., June 1st.

Dr. Edwin J. Palmer,

Who interned at Hamot Hospital, Erie, Pa., after his graduation from the Medical College of Virginia last year, has gone to Gardner State Colony, East Gardner, Mass., where he will be an assistant physician on the staff of that institution.

Dr. Martin B. Hiden,

Warrenton, Va., sailed for Europe on July 16th, and will spend his vacation visiting France, Italy, Switzerland, England, and Scotland, returning to this country about the 26th of August.

Medical College of Virginia News.

Dr. Albert C. Broders, of the Mayo Clinic, has accepted the position of professor of surgical pathology and director of cancer research, effective in August. Dr. Frank L. Apperly will continue as head of the department of general and physiopathology. Dr. Broders is a member of the class of '10, Medical College of Virginia and was awarded the degree of D. Sc. by the College at its Commencement Exercises in 1929.

Dr. William B. Porter, professor of medicine, is spending about two months in Puerto Rico making a study of the adjustment mechanisms occurring in the circulatory apparatus in chronic anemias associated with parasitic infections. Dr. Ramon Suarez, of Puerto Rico, will be associated with Dr. Porter in this investigation and will deal primarily with the physical and chemical changes in the blood. While in Puerto Rico, Dr. Porter will give a series of lectures and clinics.

The fifth Saint Philip Hospital postgraduate clinic for Negro physicians was held June 17-29. Forty-one physicians matriculated in this clinic, representing the states of Kentucky, North Carolina, South Carolina, Texas, and Virginia. The clinic is subsidized by the General Education Board of New York.

Bids for the new central heating plant and electrical distribution system to cost $130,000.00 were opened on July 2. This work is being done under a federal loan and grant.

Dr. Frank L. Apperly, professor of pathology, will spend July in Europe visiting various hospitals and clinics.

Miss Mary Alice Riley has been appointed head of the Social Service department. She came to the institution from the Lying-In Hospital of New York City.

News from the University of Virginia, Department of Medicine.

On June 10th Dr. Oscar Swineford gave a report on Instruction in Allergy in Medical Schools of the United States before the Association for the Study of Allergy.

On June 11th Dr. L. T. Royster read a paper on Body Type in Negro Children before the Section on Pediatrics of the American Medical Association at Atlantic City.

Drs. D. C. Smith, W. A. Brumfield and E. E. Barksdale were awarded a Certificate of Merit Class II for their exhibit illustrating Practical Epidemiology of Syphilis during the recent meeting of the American Medical Association at Atlantic City.

Dr. Robert V. Funsten was elected Secretary of the Section on Orthopedic Surgery of the American Medical Association at the meeting in Atlantic City.

News Notes from the Duke University School of Medicine.

At the graduating exercises held at Duke University, June 3rd, forty-seven medical students received the degree of Doctor of Medicine and seven the degree of Bachelor of Science in Medicine. At the same time, nineteen nurses received their diplomas in Nursing.

On June 8th the spring quarter of the school of medicine ended and the summer quarter commenced June 17th with fifty-eight students registered here or elsewhere for credit at Duke. One of these is studying in London and Dublin, for which he will be given credit here.

During the spring quarter the following seniors were elected to membership in Alpha Omega Alpha: Charles E. Leach, Ben N. Miller, Jr., Ralph K. Shields and Robert B. Stith, Jr.

One June 20th the following talks were given by members of the faculty: Dr. E. P. Alyea on Urological Back Pain, and Dr. R. A. Ross on the Significance of Gynecological Pain, at the meeting of the Sixth District Medical Society, at Burlington, N. C., and Dr. Bayard Carter on Occipital Posterior Presentation, Eclampsia and Obstetrical Anaethesia at the meeting of the Rockingham County Medical Society, at Reidsville, N. C.

Dr. Hyman Cantor,

Petersburg, Va., was appointed by Governor Peery as a delegate to represent the Commonwealth of Virginia at the ninth session of the Institute of Public affairs recently held at the University of Virginia.

Dr. J. E. K. Flannagan

Is now at Blacksburg, Va., where he is medical officer in charge of the Montgomery Transient Camp.

The American Psychiatric Association

Announces the removal of its offices to the New York Academy of Medicine, 2 East 103rd Street, New York City. This location is accessible and offers many advantages to the officers and staff of the Association.

Dr. S. L. Rucker,

An alumnus of the Medical College of Virginia in the class of '30, formerly of Moneta, Va., after a residency at the Medical College of Virginia Hospitals, Richmond, has located for practice at Elkview, W. Va.

Dr. John A. Gibson,

Leesburg, Va., was recently installed as president of the Leesburg Rotary Club for the coming year.

Dr. Guy R. Harrison,

Richmond, Va., has been re-appointed by Governor Peery as a member of the State Board of Health for a term of seven years, effective July 1st.

Dr. Harry Golston,

Roanoke, Va., has been taking postgraduate work in diseases of the heart at Harvard University Medical School.

Dr. M. T. Plyler,

Who interned at St. Vincent's Hospital, Norfolk, Va., last year, is now on the staff of the North Carolina Sanatorium, at Sanatorium, N. C.

Dr. Richard S. Herring,

Assistant to Dr. A. L. Herring at Grace Hospital, Richmond, Va., left in July for Vienna, where he expects to spend a year in postgraduate work in obstetrics and gynecology at the University of Vienna. On his return he will resume his post on the general staff at the Grace Hospital. Dr. Herring is an alumnus of the Medical College of Virginia, class of '32.

Dr. J. Paul Kent,

Who interned at Roanoke Hospital, Roanoke, Va., last year, has located on Williamson Road, Roanoke, Va., for the general practice of medicine. Dr. Kent is a member of the class of '34, Medical College of Virginia.

Dr. Robert D. Croom, Jr.,

Class of '34, Medical College of Virginia, has located for general practice at his former home in Maxton, N. C. He served an internship at the Johnston-Willis Hospital, Richmond.

Dr. L. R. Staton,

After serving an internship at the Lynchburg General Hospital, Lynchburg, Va., has located for practice at Murphy, N. C.

Dr. C. G. O'Brien,

Who graduated from the Medical College of Virginia in 1934, has located at Appomattox, Va., where he is engaged in general practice. Dr. O'Brien served a junior internship at Sheltering Arms Hospital, Richmond, and was at Gallinger Municipal Hospital, Washington, D. C., last year.

Dr. F. T. Hauser,

Recently engaged in practice at Bland, Va., is now connected with the CCC camp at Chaneysville, Pa.

Dr. William R. Pretlow,

Class of '34, Medical College of Virginia, who interned for the past year at Memorial Hospital, Richmond, has located at The Plains, Va., where he is engaged in general practice.

Dr. Thomas M. Winn,

Covington, Va., has been advised that he successfully passed the examinations of the American Board of Otolaryngology before which he appeared at the Manhattan Eye, Ear, Nose and Throat Hospital of New York City, in June.

Dr. Paul Q. Daniel,

Recently of Deltaville, Va., has moved to Highland Springs, Va., where he has taken over the home and practice of the late Dr. James T. Leftwich.

Dr. Frank H. Mayfield,

Class of '31, Medical College of Virginia, and for sometime resident in neurology at the Medical College of Virginia Hospitals, has gone to Louisville, Ky. His offices will be in Brown Building where he will continue practice in the specialty in which he has been working.

Dr. and Mrs. Archer A. Wilson,

Charleston, W. Va., sailed on the *Europa* on July 16th, for a visit abroad. Dr. Wilson expected to attend the Second International Neurological Congress at London on July 29th-August 2nd, following which he will spend four weeks visiting various European clinics. Dr. Wilson is a member of the class of '23, Medical College of Virginia, and later did special work at the Medical College of Virginia hospitals.

Dr. William R. Weisiger,

Lieutenant-Colonel in the Medical Reserve and executive officer of the 305th medical regiment, 80th Division, has just returned from Carlisle Barracks, Pa., where he spent two weeks in active duty with his regiment at the Medical Field Service School.

Examination for Associate Director of Bacteriological Laboratories, Health Department of New York City.

The Municipal Civil Service Commission of New York City will in the near future conduct an examination for the position of Associate Director of the Bacteriological Laboratories, Health Department.

The salary of the position is $6,000 per annum and the duties of the incumbent will be to assist the director of the laboratories in the executive supervision of one of the largest and most important laboratories of its kind in this country.

The examination is open to all qualified citizens of the United States. Those who do not live in New York City may obtain applications by forwarding a properly stamped and self-addressed envelope to the Municipal Civil Service Commission, Application Bureau, Room 1403, Municipal Building, New York City. Applications must be filed in the offices of the Commission before September 3, 1935, at 4 P. M.

Dr. William S. Lloyd,

Who graduated from the Medical College of Virginia last year and has since interned at the Medical College of Virginia Hospitals in Richmond, has located at R. F. D. 2 from Bumpass, Va., where he is engaged in general practice.

Dr. Ralph J. Sykes,

Who interned at Buxton Hospital, Newport News, Va., after graduation from the Medical College of Virginia in '34, has returned to his former home at Jackson, N. C., and is on duty at the CCC camp at that place.

Resigns as Dean at Georgetown.

Dr. William Gerry Morgan resigned as dean of Georgetown University School of Medicine, effective July 1st, after having filled this position for four years. Dr. Morgan will continue his connection with the school, however, as regent of the University and professor of gastro-enterology, a position he has held for a quarter of a century.

Dr. Sterling Ruffin,

Washington, D. C., was recently elected president of the Medical Society of the District of Columbia for the coming year and Dr. Coursen B. Conklin was re-elected secretary.

Dr. A. P. Traynham,

Richmond, Va., who has been absent from the city for three months because of illness, has resumed his practice at 2618 Grove Avenue.

Dr. J. E. Gladstone, Jr.,

Has located at his former home, Exmore, Va., for the general practice of medicine. He graduated from the University of Virginia in 1934 and interned last year at St. Vincent's Hospital, Norfolk, Va.

Dr. Samuel H. Garst

Has located in Staunton, Va., with offices at 112 West Frederick Street, where he will limit his work to surgery and orthopedics. Dr. Garst graduated from the University of Virginia in 1931 and has recently completed a residency in surgery at the Baltimore (Md.) City Hospital.

Souvenir Booklet on Mexico.

The Southern Medical Association has adopted the plan of having a post-convention trip to some interesting place, each year, and, following the San Antonio meeting in 1934, the visit was to Mexico. This tour was planned and personally conducted by Mr. C. P. Loranz, secretary-manager of the Association. While on this outing he collected a number of photographs of the official party and places visited and has incorporated them in brochure form —a lovely souvenir intended primarily for those who were on the tour.

Dr. George E. Waters,

Who has been acting director of the Peninsula Health District with headquarters at Williamsburg, Va., was made director of this work on July 1st.

The New York Academy of Medicine

Will hold its Eighth Annual Graduate Fortnight on October 21st to November 2nd. The subject for discussion will be Diseases of the Respiratory Tract, and the profession generally is invited to attend. The registration fee of $3.00 admits to all features of the Fortnight. Further information may be obtained from the Academy at 2 East 103rd Street, New York.

Physician Wanted.

The MONTHLY is advised that a physician is needed at Eggleston, Va., and that this should be a good opening for an alert doctor. Any one interested might communicate with Mr. E. B. Smith, Eggleston, Va.

Another location needing a physician is Bentonville, Va. This community is without a doctor. Further information may be obtained from Mrs. Ada R. Fristoe, Postmaster at Bentonville.

Obituary Record

Dr. Calvin Graham Dold,

Buena Vista, Va., died June 22nd, of coronary thrombosis. He was a native of Lexington, Va., and was sixty-five years of age. Dr. Dold received his medical degree from the University of Maryland in 1891, and had practiced in Rockbridge County for about forty-five years. He had been a member of the Medical Society of Virginia for thirty-six years. His wife and five daughters survive him.

Dr. George E. Wiley,

Bristol, Va., died March 25th. He was eighty-three years of age and graduated from the University of Maryland, Department of Medicine, in 1875. Dr. Wiley was city health officer of Bristol at the time of his death. He had been a member of the Medical Society of Virginia for fifty-one years.

Dr. Daniel Malloy Prince,

Mt. Vernon, Washington, died suddenly on April 10th. He was thirty-seven years of age and graduated from the University of Virginia, Department of Medicine, in 1924. Dr. Prince was a member of the Medical Society of Virginia, having joined while located in this State.

Dr. Thomas McCrae,

Prominent physician of Philadelphia, died June 30th. He was a native of Canada and was sixty-four years of age. At the time of his death, Dr. McCrae was Magee professor of practice of medicine and clinical medicine at the Jefferson Medical College. He was associated with the late Sir William Osler and collaborated with him in the writing of several well-known medical books.

Dr. William Brodnax Banister,

Colonel, U. S. Army, retired, Petersburg, Va., died May 1st, of coronary thrombosis. He was seventy-three years of age and a graduate of the Hospital College of Medicine, Louisville, Ky., in 1883.

Dr. Carl Atkins Foster,

Columbia, S. C., died May 15th, of coronary occlusion. He was fifty-six years of age and a graduate of the class of '04, Medical College of Virginia.

Dr. James Heiskell Carpenter,

Salisbury, Md., died May 20th, at the age of sixty-one. He was a graduate of the University of Virginia, Department of Medicine, in 1897.

Dr. John A. B. Sinclair,

Miami, Fla., died May 19th, of chronic myocarditis. He was fifty-six years of age and a graduate of the University of Virginia, Department of Medicine, in 1901.

Civilization

AND THE PROBLEMS OF DIET

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Committee on Foods

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- The use of a heavy metal as an adjuvant (preferably bismuth intramuscularly).
- Continuation of treatment without a rest period for a period of a year after all symptoms and signs of the disease have disappeared.

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SEROLOGICAL TESTS FOR ENTERIC FEVERS.

A. Corpening,

Richmond, Va.

Director of Laboratories, Virginia State Department of Health

Bacteriological evidence of enteric infection is established with certainty only on the recovery of the infecting organism. Since this is not always possible, recourse must be made to serological studies of the agglutinating properties in the patient's serum. This can best be done by using qualitative methods in the agglutination tests for enteric fevers. In this way it is possible, within limits, to differentiate between those who have had vaccine and those who have an enteric infection.

In 1924, Felix* stated that after the agglutinins which are produced by typhoid vaccination or an attack of typhoid have disappeared from the blood, they may reappear after many years under the non-specific stimulation of some non-typhoid disease. This sensitization of the body caused by an attack of typhoid or by typhoid vaccination is considered to be of lifelong duration. On can readily see the importance of information concerning whether the patient has had vaccine or a previous attack of typhoid. On very few cases are additional specimens submitted, so no opportunity is given to observe the fluctuation of agglutinins. Under these conditions every effort is made to use methods that will be of greatest aid to the physicians in the diagnosis of disease.

Whether one accepts the Felix* theory of a multiple antigen or not, it is an easily demonstrated fact that organisms of the enteric group show two distinct types of agglutination, a floccular and a granular type. By the use of two antigens a distinction can usually be made between the agglutinins due to specific stimulation in active enteric infections and those re-stimulated non-specifically by various diseases, providing a history of past enteric infection or vaccination is known.

A somatic or body antigen designated as the "O" antigen and a flagella or "H" antigen are used. The "O" antigen gives a granular, small flaking agglutination which is group specific. That is, its presence in the serum of a patient indicates an enteric infection only. The "H" antigen gives a floccular, large flaking agglutination which is species specific. It indicates which of the organisms of the enteric group caused the formation of the agglutinins.

Due to the presence of agglutinins in the serum of certain individuals resulting from vaccination or previous infection the diagnostic significance of this qualitative estimation is modified as follows:

The presence of "H" or "O" agglutinins, both of significant titre in an unvaccinated individual without previous history of enteric infection, is diagnostic of enteric infection with the species indicated by the "H" agglutinins.

In a previously vaccinated individual or one with a history of previous enteric infection, the presence of "H" agglutinins in a low titre (serum dilution less than 1 to 800) probably has no significance; whereas, the presence of "O" agglutinins in a titre of 1 to 200 is presumptive evidence of an infection.

In the examination of 5,404 blood specimens, using two killed suspensions of B. typhosus, one to demonstrate the floccular or species specific, and the other the granular or group specific properties, we find that the information we are able to give the physician is of greater significance than could be given by the use of one antigen. This is in general agreement with the findings of others who report similar studies.

*Felix, A.: The Qualitative Receptor Analyses in Its Application to Typhoid Fever. *J. Immunology*, 9:115, 1924.

FOURTEEN HUNDRED AND FIFTEEN SPINAL ANESTHESIAS WITH SPECIAL REFERENCE TO INDICATIONS, COMPLICATIONS AND MORTALITY—WITH CASES REPORTED AND CHARTS.*

J. MOREHEAD EMMETT, M. D.,
Clifton Forge, Va.

This paper is presented as a review of the surgical services of the Chesapeake and Ohio Hospital, in Clifton Forge, and the Community House, in Hot Springs, since March 28, 1930. The presentation was inspired by our desire to learn just what our experiences have been with the use of the various methods of anesthetics which we were employing. A vast literature has been built up around the modern-day anesthetics. These reports are conflicting and offer a poor basis upon which may be established a substantial opinion as to the value of the various anesthetics in common employment.

We recognize the prime requisite of any anesthetic is safety and the anesthesia which offers the greatest degree of safety must necessarily be given great consideration. In most operations this means that the anesthetic must carry the patient through the operative procedure without damage as the result of its employment. In some instances the anesthetic must be chosen because it may actually facilitate the operative procedure by producing complete muscular relaxation. Particularly is this true in certain types of abdominal surgery. We feel that anesthesia should be looked upon from the broad view-point of anesthesia and operation, rather than from the point of view of the anesthesia alone. Our real objective in the practice of surgery is to get for our patients the complete benefit of any operative procedure employed with the minimum hazard. Unfortunately some of the anesthetics which are capable of producing complete muscular relaxation are associated with certain dangers that are actual and real.

When patients are subjected to surgery, the responsibility for their welfare is ordinarily a problem of the surgeon in charge of the case. I am of the opinion that the surgeon is best qualified, by virtue of his knowledge of the particular patient, to select the anesthetic which is to be employed. The surgeon must naturally co-ordinate the problems of his patient to the point where he may use skill and judgment in the selection of the anesthetic. Too much emphasis cannot be placed upon the necessity of full co-operation and understanding between the surgeon and the anesthetist. With due deference to the trained medical anesthetist, I may say that I am not willing for the most skilled anesthetist to select the type of anesthesia which is to be employed upon my patients.

We have had a moderate experience with some of the common anesthesias now in general use. My personal experience is reasonably wide in the use of ether, regional anesthesia, nitrous-oxide and ethylene. We have used chloroform and avertin only occasionally.

Ether probably should continue to maintain its place in general surgery as the anesthetic of choice in the hands of the average anesthetist. It is often poorly given with a relative record of safety. While it does not give the complete muscular relaxation of spinal anesthesia, it is true the relaxation is ordinarily satisfactory for the performance of the usual operative procedure. It certainly is the anesthetic of choice for the occasional anesthetist.

Extensive operative procedures may be accomplished by the use of regional anesthesia without harmful effects, but the requirement of muscular relaxation is not complete and it is often unsatisfactory particularly for abdominal surgery. Regional anesthesia is best suited to operations requiring limited fields of exposure.

Nitrous-oxide and ethylene are excellent anesthetics when one considers only freedom from latent and harmful effects. Adequate muscular relaxation is very difficult with either nitrous-oxide or ethylene unsupported by other basal anesthetics for difficult and extensive surgical procedures in the abdomen. Skilled anesthetists may give gas with a degree of

*Read before the sixty-fifth annual session of the Medical Society of Virginia, at Alexandria, Va., October 9-11, 1934.

satisfaction, but our experience has led us to recognize its limited field of usefulness. Considering, however, that group of patients who are poor surgical risks, I am inclined to think that nitrous-oxide or ethylene, combined with ether or avertin, offers the method of choice.

Spinal anesthesia, or block anesthesia, has been used by us rather extensively for the past four and one-half years. Our first experiences with this type of anesthesia led us to feel that its scope of usefulness was very wide. At no time, however, were we sufficiently enthusiastic about its use as to warrant our using it as an anesthetic of choice for operations above the diaphragm. Our personal experiences with spinal anesthesia and the study of current literature have caused us to modify our primary opinions in regard to spinal anesthesia to a point where we feel now that it is particularly useful in abdominal operations, when patients are good surgical risks or where difficult abdominal operations are anticipated requiring complete muscular relaxation for their performance.

The complications of injuries to spinal nerves, followed by paralysis or paresthesias, have not occurred in our group of patients; nor have we had infections of the meninges. We have seen no case of death from spinal anesthesia occur in a patient who was a good surgical risk. The three immediate spinal anesthesia deaths in our own cases might well be attributed to faulty selection of patients for spinal anesthesia. All these cases occurred early in our series and I am reasonably sure that not one of them would be selected now for spinal anesthesia. The general mortality from spinal anesthesia is unquestionably higher than that which is found in other anesthetics in common employment. It may be said that the selection of spinal anesthesia should depend upon whether the advantages of the best possible operative conditions counter-balance the increased risks incident to spinal anesthesia. The decision for its employment should rest upon the type of operation to be performed and the condition of the patient. Certainly spinal anesthesia carries with it some added hazard in any patient who is a questionable surgical risk. On the other hand, we feel sure that the use of spinal anesthesia has enabled us to satisfactorily carry certain patients through difficult surgical crises with success whose successful operation might have been questionable under any anesthetic producing faulty muscular relaxation. We feel that, even though there may be increased anesthetic mortality, its use has been fully justified by the life-saving results which we have been able to obtain in difficult and hazardous surgical procedures necessitating great muscular relaxation. With a better understanding of the operative complications and the syndrome of respiratory distress and cardio-vascular insufficiency resulting from spinal anesthesia, it is probable that many of the reported mortalities might be avoided at the present time.

We have observed a fall in blood pressure which is rather constant in all patients following spinal anesthesia. When this fall in blood pressure is slight, there result few clinical manifestations. In our own group of cases we have observed that, the higher the spinal block and the larger dose of spinal anesthesia employed, the more pronounced was the drop in blood pressure and the more alarming were the respiratory and cardiac complications. Seevers and Waters have explained the occurrence of these phenomena in a most satisfactory manner. Their conception of the fall in blood pressure and the respiratory embarrassment during the untreated high spinal block was:

The initial decrease in peripheral resistance to blood flow by a vaso-nerve and skeleton-muscle paralysis; a decrease in minute volume respiration accompanying intercostal-nerve paralysis; inadequate oxygenation of blood; diminished blood flow and progressive loss of vascular tone over the entire body with acute cardiac failure, both the result of oxygen starvation and failure of the respiratory mechanism as the nutrient flow of blood becomes inadequate, the latter occurring while the heart is capable of being revived by oxygenation.

These experimental conclusions have been clinically borne out by the response which is manifested in these patients with respiratory complications and cardio-vascular collapse by the judicious use of artificial respiration and the free use of undiluted oxygen. We have seen no case of cardio-vascular collapse which was not primarily associated with an alarmingly slow respiration. When artificial respiration has been established, and free use of oxygen employed, there has been clinically observed an immediate response in the cardio-vascular let-down. Sise reports two cases with

CASE REPORTS

SPINAL ANESTHESIA
DEATHS ON TABLE

	Diagnosis	*Operation*	*Circumstances of Death*
(I) A. F. O., 50. White, Male.	Probable tumor of pyloric end of stomach.	Pantocain anesthesia. High midline incision. Abdomen explored. Tumor found to have arisen from lesser peritoneal cavity secondarily involving stomach.	Twenty minutes after anesthetic was given patient devoloped respiratory distress, which was manifested by slow shallow respiration and whispering voice sounds. Artificial respiration mechanically begun. The heart function slow and irregular. Condition improved and heart function became regular. Respiratory distress again became apparent with a complete respiratory paralysis. Artificial respiration was continued forty minutes, or until death ensued.
(II) N. B., 41. Black, female	Toxemia of pregnancy. Contracted pelvis. Myocardial disease. (Patient had been in labor 48 hours, she had two convulsions. Her convulsive seizures were not controlled by opiates and magnesium sulphate.)	.12 gms. neocaine anesthesia. Low midline incision.	Ten minutes after anesthetic was given patient suddenly developed respiratory distress, which was manifested by slow shallow respiration. Mechanical artificial respiration was begun and intravenous fluids started. No response to treatment. Patient died of respiratory paralysis.
(III) G. C. W., 65. White, male	Low intestinal obstruction for a period of seventy-two hours prior to operation.	Spinocain anesthesia. Mid-right rectus incision. (Distal 16" of ileum were resected because of gangrene.) Ileo-caecal anastomosis.	Forty minutes after anesthetic was given patient developed respiratory distress manifested by slow respiration, whispered voice sounds, cardiac incompetency. Mechanical artificial respiration employed without benefit.

SPINAL ANESTHESIA
VIOLENT RESPIRATORY INFECTION

	Diagnosis	*Operation*	*Circumstances of Death*
(IV) J. A. H., 50. White, male, Wt., 200 lbs. Ht., 5 ft. 4 in.	Large high incisional hernia. Myocardial disease. (Patient was retained in hospital one week preparatory to operation because of cold.)	.12 gms. neocaine anesthesia. Repair of incisional hernia 11-11-31, by Mayo-imbricated method.	Twenty-four hours after operation patient developed massive bilateral bronchial pneumonia and died on the third day.
(V) E. M. B., 40. White, female	Partial intestinal obstruction and peritoneal adhesions, post-operative.	.12 gms. neocaine anesthesia. Obstruction freed by incising peritoneal adhesions on 10-6-31.	Twenty-four hours after operation patient developed massive post-operative pulmonary atelectasis in left chest. Symptomatic treatment resulted in no improvement. Death occurred 10-8-31.

GENERAL ANESTHESIA
VIOLENT RESPIRATORY INFECTION

	Diagnosis	*Operation*	*Circumstances of Death*
(VI) W. E. R., 64. White, male	Hypertrophied and obstructive prostate.	Ethlyene anesthesia. Suprapubic prostatectomy on 6-28-34.	Twelve hours after operation patient developed acute respiratory distress. T. 104, P. 140. Physical examination showed massive bilateral bronchial congestion, which had the physical evidences of bronchial pneumonia. Died twenty-four hours after operation.

complete respiratory paralysis carried from twenty minutes to one-half hour with artificial respiration, or until the effects of the spinal block had worn off. Babcock reports three similar cases.

We have used ephredrine in prophylactic doses to maintain the original blood pressure. We have not used ephedrine in cases with persistent tachycardias before operation. It is not felt that ephedrine will do any harm to a heart muscle which has already been chosen to stand the strain of a spinal anesthesia. We have used a moderate Trendelenburg position during most operative procedures and, when circulatory disturbances have taken place, we have given intravenous fluids before the vessels and heart were in a state of collapse.

CHART I

Total General Anesthetics		1,541
*Total Spinal Anesthetics		1,415
		2,956
Mild Respiratory Infections		
General	20	1. 3%
Spinal	41	2. 9%
Violent Respiratory Infections		
General	6	0. 4%
Spinal	6	0. 4%
Respiratory Deaths		
General	1	0.06%
Spinal	2	0.14%
Deaths on Table		
General	0	0. 0%
Spinal	3	0. 2%
Deaths Attributable to Anesthetic		
General	1	0.06%
Spinal	5	0.35%
*Spinal Failures	25	
Percent of Spinal Failures		1. 8%

CHART II

Intra-Abdominal Operations:

	General	*Spinal*
Biliary Tract	24	120
Stomach	8	40
(Partial Gastrectomy)	(1)	(16)
Intestine	23	49
Appendix	283	407
Exploratory	16	21
Genito-urinary	1	2
Gynecological	164	361
Miscellaneous	7	13
	526	1,013

CHART III

Extra-Abdominal Operations:

	General	*Spinal*
Face and Head	44	0
Thyroid	125	0
Chest	4	3
Breast Amputations, Radical	22	0
Hernia	43	151
Genito-Urinary	79	53
Gynecological	263	69
Rectal	116	65
Amputations	27	17
Extremities	86	16
Miscellaneous	207	28
	1,015	402

CHART IV

	General		*Spinal*	
Intra-Abdominal Operations	526		1,013	
Mild Respiratory Infections	9		33	
Violent Respiratory Infections	4		5	
Respiratory Deaths	0		1	
Deaths on Table	0		3	
Deaths Attributable to Anesth.	0		4	
Extra-Abdominal Operations	1,015		402	
Mild Respiratory Infections	11		7	
Violent Respiratory Infections	2		1	
Respiratory Deaths	1		1	
Deaths on Table	0		0	
Deaths Attributable to Anesth.	1		1	

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DISCUSSION

DR. I. A. BIGGER, Richmond: I would like to congratulate Dr. Emmett on his rational discussion of this important subject. It seems to me that my ideas so nearly agree with his on most phases of the subject that the main thing that I can do is to emphasize some of his statements.

My general impression is that spinal anesthesia is the anesthetic of choice only in operations where muscular relaxation is of primary importance. In the Surgical Department of the Medical College of Virginia Hospitals, we use spinal anesthesia in a large percentage of abdominal operations and we use it frequently in operations on the lower extremities. We almost never use it in operations above the diaphragm because the advantage of spinal anesthesia above the diaphragm is not sufficient to outweigh the increased danger.

It seems to me that a discussion of the indications and contra-indications of spinal anesthesia must necessarily include the question of dosage. In the upper abdomen 150 mg. of novocain is usually necessary to obtain anesthesia, whereas, in operations upon the lower extremities 50 mg. of novocain will usually suffice. The larger dosage is contraindicated in severe heart disease and hypertension, but 50-75 mg. carries little danger in either of these conditions.

As an indication of our estimate of the usefulness of spinal anesthesia, I would like to give some figures from our surgical service for the year 1933. There was a total of 4,887 operations of all types. In this group we used spinal anesthesia 977 times or in nearly 20%. I found, rather to my surprise, that we were using spinal anesthesia in approximately 80% of the abdominal operations. My impression is that we are not using spinal anesthesia as frequently as we were a year ago in upper abdominal cases, but we are using it more frequently in lower abdominal cases.

DR. HERBERT H. SCHOENFELD, Washington: May I ask the essayist one question—the incidence, if any, of a picture that could be ascribed to meningomyelitis. I have seen one case, following spinal anesthesia. We occasionally hear report of marked inflammatory reaction in the spinal meninges, and perhaps in the cord itself. Certainly this complication can be very distressing, if not permanently damaging in its effect.

DR. FRANK S. JOHNS Richmond: I have enjoyed Dr. Emmett's report and frank analysis of his cases.

In our private work we have had no calamities with spinal anesthesia, but we have had some embarrassment, especially with patients advanced in years and it has been necessary to do the operation under general anesthesia at a later period. We also had one case in the ward of another hospital who was operated on under spinal anesthesia by my associate, Dr. Daniel. This patient died a few days later of meningitis.

The use of general anesthesia properly given has been a great satisfaction to me and I believe an advantage to my patients. Dr. I. H. Goldman, my anesthetist, gives an ideal anesthetic from the patient's point of view. He usually gets an upper abdominal relaxation with nitrous-oxide-ethylene anesthesia plus fifteen per cent ether. Many upper abdominal cases of serious nature are relaxed sufficiently under nitrous-oxide-ethylene anesthesia alone.

I had the impression that spinal anesthesia was being used liberally on ward patients. I am pleased to hear, through Dr. Bigger, that this wave of enthusiasm has been slightly curbed.

DR. EMMETT, closing the discussion: I want to thank all the gentlemen who have discussed my paper. I do not think that I would have elected to have read a paper on spinal anesthesia had I realized that our complications from this anesthesia were going to be so apparent and impressive.

I have never been sufficiently enthusiastic about spinal anesthesia as to cause me to use it exclusively. I have found it very advantageous in my work and have had a feeling generally that the respiratory complications would be minimized after spinal anesthesia. A correlation of our studies does not confirm this opinion. We have had three outstanding deaths following the use of spinal anesthesia and I feel now that all of these deaths were due probably to the improper selection of cases for spinal block. They occurred in the early part of our series. A little more knowledge of the proper selection of cases and more knowledge of the methods of combating respiratory paralysis might well have avoided these fatalities.

Dr. Bigger, I think, mentioned a very important phase of this subject—that is, the question of dosage. In our early cases we used relatively large doses—from 120 to 150 mgms. for the average abdominal case. In our later cases we have found that we have been able to accomplish the maximum procedures with 100 mgms. Our own results and a careful analysis of the literature led me to believe that the smaller the dose and the lower the anesthesia, the less likelihood there was of a respiratory paralysis.

A material contribution in the question of spinal anesthesia has been given in the experimental work of Waters and Seevers. They have demonstrated that, although patients may have respiratory paralysis, if the proper method of artificial respiration is established early, before cardiac embarrassment has taken place, such patients may be carried through their period of spinal block without disaster. Sise, of the Lahey Clinic, has reported two cases successfully treated with artificial respiration and Babcock has reported three cases.

Dr. Schoenfeld asked the question concerning infections. Fortunately we have not had any infections of the meninges in our group of cases, although we have realized that eventually, if this type of anesthesia is continued to be employed, we will have infections.

Dr. Johns has been very fortunate in his experience with general anesthesia. Dr. Johns' good fortune might well be attributed to the fact that he has associated with him an anesthetist of the highest type who has given anesthesias for him for twenty years. Naturally Dr. John's anesthetist is more adept than those anesthetists who are available to the majority of us.

POLIOMYELITIS.

JAMES ASA SHIELD, M. D.,
Richmond, Va.

The incidence of poliomyelitis in our midst makes a review of this disease timely. Experimental poliomyelitis is entirely neurotropic. The virus travels along the olfactory nerve fibers to the central nervous system and it is propagated along the nerve tracts. The spinal fluid or blood does not seem to play a part.

The transmission of polio and its occurrence during the warm part of the year are indeed puzzling. We speak of the disease being caused by a virus. It is remarkable that a person with polio so rarely gives it to those around him. It is suggested that polio is carried by persons who have the disease in such mild forms they do not know they are sick. In an epidemic it seems to be that those who have natural immunity do not have the disease. Adults more frequently have a natural immunity; newborn babies seem to have a natural immunity. In an epidemic it seems that the number of cases depends, to a large extent, on whether or not the community has any natural immunity. It is the hope of medicine that we shall be able to give artificial immunity. Again we see epidemics recurring in the same locations. It is very likely that many people have polio and do not know it. It is also quite probable that during times of epidemic many people are diagnosed as having abortive types of polio that never have it.

The incubation period is eight to fourteen days or shorter; no symptoms. The prodromal stage, one to three days, is characterized by headache, vomiting, diarrhoea or constipation, fever, slight pharyngitis, restlessness at night and sleepiness during the day. (Cases are observed which began at once with paralysis.) If the process continues, it localizes in the central nervous system to produce the second, or pre-paralytic, stage. There may be an interval of one to four days or more between these stages and then fever, headache and gastro-intestinal symptoms start again along with symptoms of meningism and possibly symptoms of motor irritation (changes in reflexes) and in the following three to six days paralysis sets in with differences in the reflexes, decrease or disappearance of the ankle, knee and abdominal reflexes, fibrillary jerks, tremors, abnormal sensitiveness to pressure in single extremities, and pains when the head is bent forward or when the vertebral column is bent backward. This stage is followed quickly by paralysis. The spinal fluid should always be taken for diagnosis as well as therapeutically. The fluid will be clear or murky and under increased pressure which should be reduced to normal. The examination of the fluid will reveal 5-100 cells, or more, and increased globulin. The above picture with this fluid finding is diagnostic.

The paralysis is most frequently in the legs, then the arms and occasionally the cranial nerves are involved. Disturbance of the bladder and rectum is rare.

Successful therapeutic claims have been made for treatment in the early stages. There are many abortive cases that never pass the early stages, so it is absolutely impossible to assay any such treatment. Complete rest is of greatest importance during the acute stage with particular attention given to keep the extremities and body in proper position. Lumbar puncture seems to be universally accepted. It is felt that the fluid should be kept down to a normal pressure by spinal fluid drainages, at first every day and then every few days until inflammatory edema in the spinal cord and in the meninges

has disappeared. Intravenous injections of hypertonic solutions have the same rationale. Hypotonic solution with continuous drainage has been suggested as a means of cutting down the cell count. This has been questioned. Pooled convalescent and normal adult serum has been disappointing. Blood transfusions have been used and parents' blood, intramuscularly injected, but neither of these has been of any proven volue. Drugs are of no curative value. Vaccine (P-B and K) is for prevention (if proved to be of any value). If spinal symptoms are present, put a board between the mattress and springs under the lumbar and dorsal portions of the spine. A pillow under the back will add to the comfort for in lordosis the spinal cord is relaxed. The outward rotation of the legs is combated by sand sacks. It is very important to brace the feet with a stool pressed to the soles. The comfort of the patient is added to by protecting them from the pressure of the bedclothes by means of hoops. When the fever is over we should start with cautious, passive movements of the paralyzed extremities which are gradually increased. Partial baths, as warm as possible, or warm compresses and kneeding massage, modified carefully to the sensitiveness to pain, further the recovery of the muscles. The massages can usually be started after the second week. Faradic current is used after the third week. As convalescence proceeds active exercise should be begun, at first in a warm bath, and above all, with great care that the patient does not become overtired. Mechanical and electrical exercise treatment should be continued for months and it not infrequently brings results. If severe muscular dystrophies develop we should have an orthopedic consultation as the patient can often be greatly helped by small splints or supporting apparatus.

212 West Franklin Street.

TOTAL THYROIDECTOMY FOR CHRONIC HEART FAILURE.*

D. G. CHAPMAN, M. D.,
Richmond, Va.
(From the Medical Department, St. Elizabeth's Hospital)

Harvey, in 1628, discovered and demonstrated that the blood traveled in a circuit. He estimated that the minute volume output of the heart was 400 c.c., but made no calculation as to the velocity flow. Stephen Hales, in 1733, made the first quantitative estimations of the blood flow. From his experiments he concluded that the velocity of blood flow in the aorta of the horse was 1,734.9 feet per hour and in man 8,952 feet per hour. The injection method was first used by Herring in 1827 when he injected potassium ferrocyanide. Stewart, in 1892, used sodium chloride injections and noted the change in electrical conductivity of the blood vessels at various areas. These experiments and those of Koch in 1922, which were on normal and abnormal subjects, most likely inspired the Boston investigators, particularly Blumgart, Yens and Weiss, to conduct their extensive researches which have been continuous to the present day.

They have correlated the value of the velocity of blood flow to the basal metabolic needs of the body. In their experiments on normal and abnormal subjects they found that the velocity of blood flow was definitely determined by the metabolic demands of the body and that the metabolic demands were most accurately determined by the metabolic rate. They state: "An adequate flow of blood to the tissues implies two things. In the first place, an adequate amount of blood must be expelled from the heart per unit of time. In the second place, this blood must be transported to the site of utilization at an adequate speed." In normal subjects the amount of blood and the velocity flow meet these requirements.

In thyrotoxicosis without decompensation the minute volume output and the speed of the blood are increased in close proportion to the increased metabolic rate. A heart under these conditions with the body at rest is doing the work of a normal heart with the body at work. This excessive load causes a disproportionate relationship between the minute

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volume output, velocity flow and metabolic demands ending in decompensation.

In myxedema the minute volume output and the speed of the blood are decreased in a close relationship to the decrease in the metabolic rate. If two curves are plotted in a myxedematous patient, one to show the velocity of blood flow, the other the basal metabolic rate, and thyroid extract is given, the two curves will practically parallel each other. When the thyroid extract is discontinued, the two curves will fall to their original level in a parallel manner. The blood flow in myxedematous patients without heart disease is almost as slow as that of patients with circulatory decompensation from rheumatic valvular heart disease and auricular fibrillation. The fact that the myxedematous patients without heart disease show no signs of decompensation in spite of the slow velocity flow demonstrates, so far as supply and demand are concerned, the importance of the metabolic demands of the body.

In angina pectoris the patient at rest seldom has pain. This is due to the adequate blood supply. Pain in angina of effort will be produced in the same subject by doing the same amount of work in an astonishingly close range. During exercise greater demands are made of the circulation and due to the narrowing or spasm of the coronary vessels a proper amount of blood is not furnished the heart and pain ensues. Anginal attacks are produced by all agents which tend to increase the work of the heart and are alleviated by those which decrease it.

In circulatory insufficiency of a mild degree with a normal metabolic rate the blood flow is markedly decreased. As the decompensation advances in spite of a metabolic rate within normal limits, the slowing of the velocity of blood flow parallels to a close degree the severity of the congestive failure.

In a study of these four cardiac conditions, it is evident that circulatory insufficiency consists of the heart being unable to supply and maintain a minute volume output of blood at a sufficient velocity to meet the basal metabolic needs of the body. Theoretically the need of the body equals the blood flow. Therefore, if the blood flow cannot be increased to meet the demands of the tissue, the demands of the tissue should be decreased to conform with the blood flow. This may be done by total removal of the thyroid gland.

The arm to tongue circulation time is generally used as the index of the velocity of blood flow. This time is measured by injecting from 3 to 5 c.c. of a 2 per cent solution of decholin into an anticubital vein and when a bitter taste is experienced by the patient it is recorded as the circulating time. Various figures for many normal and pathological states are available. The following are about the general average for the arm to tongue circulating time: Normal subjects, from ten to sixteen seconds; hyperthyroidism six to twelve seconds; anemia nine to fifteen seconds; polycythemia sixteen to eighteen seconds; myxedema twenty to thirty seconds; congestive heart failure twenty to forty-seven seconds.

The symptoms of congestive failure of long standing are usually markedly improved after total thyroidectomy. Most of the patients state in a few days to two weeks after the operation that a "heavy load has been lifted from their chest" and that the pounding of the heart had disappeared and moving about in bed did not cause distress. Breathing a few days after operation is much easier and by the end of the second or third week those with dyspnea and orthopnea can lie flat in bed without discomfort and usually can sleep without sedatives. The pre-operative craving for water disappears.

The signs of congestive failure are greatly modified after operation. The natural color of the skin returns, the rales at the base of the lungs disappear, the liver congestion and tenderness are greatly lessened or disappear, and the edema with slight dependency is diminished or remains absent. The pulse rate is markedly slowed, the heart sounds become less intense and the cardiac impulse less hyperactive. The dose of digitalis to control auricular fibrillation is decreased, the erythrocytes are generally reduced, and hemoptysis lessens as compensation appears. The blood pressure is seldom altered. The electrocardiographic changes are varied as in myxedema. Premature contractions disappear in many patients. The vital capacity of the lungs is increased in many but not in all; however, their improvement is as great. This is probably due to the fact that in myxedema the vital capacity is abnormally low. The velocity of blood flow remains slow in contra-distinction to the usual improvement that follows congestive failure with an unaltered metabolic rate. In the latter case improvement always follows an increase in velocity flow of blood. Tolerance to exercise is markedly improved. Some

of the Boston cases were only able to make from three to ten trips over a few steps before operation and after operation one case made 419 trips without any of the previous symptoms of cardiac embarrassment.

In angina pectoris the relief from pain is interesting. In most cases there is relief from pain soon after the operation. This pain may recur, again disappearing later. If a hemithyroidectomy is done, there is relief from pain on the side of the operation. If the pain is reproduced, it will appear only on the non-operated side. Later, it may appear on both sides, finally to disappear when the basal metabolism rate is sufficiently lowered. If a bilateral ablation is done and the basal metabolic rate is markedly lowered, pain will not occur.

Zondek, in 1918, first described the myxedematous heart and many articles on that subject have appeared since that time. In a review of the literature it appears that probably more hearts have suffered from thyroid extract than have ever been improved. The signs and symptoms that follow the total removal of the thyroid gland are slowing of the heart rate, slight dryness of the skin, increased sensitiveness to cold and a slower growth of hair. Mental stupor, depression and nervousness are not seen until the basal metabolic rate is below minus 30, and then thyroid extract is indicated. After operation, instead of the myxedema producing unpleasant symptoms, the symptoms are markedly improved. This is partly due to the distressing symptoms suffered before from circulatory failure. If compensation is restored and maintained in a large majority of hopeless cardiac patients, should the question of a myxedematous heart be an issue?

The indications for such a radical procedure are few. However, in selected cases of circulatory failure and angina pectoris, where the patient is completely incapacitated and all other treatment has failed, the operation may add months to years of active life.

The contra-indications are a rapidly progressive cardiac lesion, syphilitic heart disease, congestive failure with edema at the time of operation, active pulmonary infarctions, advanced arteriosclerosis, active rheumatic infection, or an active phase of coronary thrombosis or impaired renal function, and when the basal metabolic rate is minus 10 to minus 15, as well as when, after a careful study, the patient does not seem to be a fair surgical risk.

Dr. H. L. Blumgart has kindly sent me tables showing the condition of all patients he and his associates have treated by total thyroidectomy up to June 1, 1934. Of fifty patients with circulatory failure treated, twenty-four have compensation maintenance two to eighteen months and patients are working or able to work. There were six operative deaths, six patients with recurrent temporary decompensation, six subsequent deaths, two patients unimproved and six too recently operated upon to report results. There were also twenty-five patients with angina pectoris from whom the whole thyroid gland was removed, with complete relief in eight cases, partial relief in eleven, no relief in four, no operative deaths, and two too recently operated upon to justify a report. In the last thirty consecutive operations on these seventy-five patients there were no deaths.

The following is the report of a case of arteriosclerotic heart disease with aortic insufficiency, marked hypertrophy, hypertension, cardiac asthma and chronic congestive failure:

Mr. W. H. W., age 52 years, was admitted to St. Elizabeth's Hospital, Richmond, Va., March 16, 1934. He complained of congestion of his lungs, palpitation of the heart, shortness of breath, a constant pressure on his chest, pain in the upper right abdomen, and inconstant nausea.

History: Father died at the age of 50 years, mother at the age of 60 years, and one sister died of heart and Bright's disease. The past history was negative except for diphtheria at the age of 4 years. His health was excellent until eight years ago when he first noticed slight dyspnea. His height was 5 feet and 5½ inches, and he weighed 177 pounds. For the next two years he assumed that his weight was the cause of the dyspnea, but an examination about that time showed an excessive blood pressure with signs of myocardial weakness. There were some stomach complaints and X-ray examination showed gall-bladder pathology. The treatment for the next six years was directed toward his hypertension and indigestion. The symptoms of heart failure progressively continued until twelve months before admission to the hospital when they had become so severe that life was miserable. The palpitation, dyspnea, pressure on his chest, and gastrointestinal symptoms were constant. Cardiac asthma and congestive failure occurred with greater frequency and with less and less

exertion. For three months prior to admission, one or two days a week out of bed would cause congestive failure of distressing severity.

Physical Findings: The patient was poorly nourished, of a sallow complexion, with visual evidence of an enlarged heart, and pulsating vessels in his neck. The gums were infected, lungs were congested in the bases, and the liver was enlarged three fingers and was quite tender. The heart was markedly enlarged, with a loud systolic murmur and a diastolic murmur with many extra systoles; the blood pressure was 250/130. There was slight edema of the ankles.

Laboratory Findings: Erythrocytes 3,988,000; W. B. C. 8,260; hemoglobin 65 per cent. Phenolsulphonephthalein output 45 per cent the first hour and 14 per cent the second hour. Blood urea 40 mg. per 100 c.c. of blood. Van den Bergh 8.6 mg., direct reaction. Blood calcium 8.2 mg. The urine showed specific gravity of 1.025, a distinct trace of albumin, slight trace of bile, rare granular and hyaline casts. Two basal metabolism tests showed a rate of plus 43 and plus 41, but the tests were unsatisfactory on account of dyspnea.

After careful study of the patient and considering the long cardiac history and the fact that the patient had been treated by a competent internist for over a year during which time his cardiac failure had been slowly progressive, total removal of the thyroid gland was thought to be indicated and the patient expressed the desire to have this done, since he said life had not been worth living for the past few months. On March 19, 1934, Dr. J. Shelton Horsley completely removed the patient's thyroid gland, under ethylene anesthesia. For twenty-four hours there was smooth convalescence, with only a slight rise in temperature and pulse rate. The following day auricular fibrillation and a pulmonary infarction occurred, followed later in the day by a kidney infarction. After these complications subsided, the convalescence was satisfactory after the fourth day. On account of the previous digestive disturbances and the X-ray finding of gall-bladder pathology, and an attack of pain in the right upper abdomen on the ninth day after the total thyroidectomy, a cholecystectomy was done, under local anesthesia, on the fifteenth post-operative day. Following this, the patient's temperature on the day of the cholecystectomy was 99.8° and on the second day it was 100°, after which time it did not go above normal. Seven days after ablation of the thyroid the basal metabolism was 0 and later minus 19, which was the lowest rate recorded, but no metabolism tests were done during the best periods of compensation.

He remained in the hospital for forty days. During the last seven days he was up and walking about without any shortness of breath or palpitation. When asked how he felt, he said, "A great load has been lifted from my chest and the pounding has disappeared." He returned home much improved and apparently compensated. He started a new business, but was forced to give it up on account of the amount of work it required. One month after leaving the hospital he was much improved and well satisfied with the results. There were few of the signs and symptoms of myxedema. In another month he returned with an ascites which was removed by paracentesis. Since then he has been on a cardiac regime with diuretics. There has been no return of the cardiac asthma nor any of the other distressing symptoms. On October 1st he returned for examination as requested. One morning before coming to the hospital he walked sixteen blocks without fatigue. When asked how he felt, he said "I feel fine except that it's hard to keep warm these cold days, and my abdomen stays too large." The results have been most satisfactory in relieving the cardiac distress, but the ascites continues to be troublesome.

NOTE BY DR. J. SHELTON HORSLEY

The indications for total thyroidectomy for heart disease must necessarily be determined by the careful study of a medical man. In such cases the surgeon has to do only with the operative technic. As has been emphasized by Berlin and by others who have done total thyroidectomies, this operation is much more difficult and tedious than partial thyroidectomy, though experience in thyroid surgery is helpful. The important points are the avoidance of injury to the recurrent laryngeal nerves and protection of the parathyroid glands. The operation which I did in this case reported by Dr. Chapman followed the general lines of the technic recommended by Dr. Berlin. A wide incision was made low in the neck, the ribbon muscles were doubly clamped and divided, and the whole thyroid gland was dissected out from right to left, with careful hemostasis and sharp dissection throughout. The

capsule of the gland was closely followed and no particle of thyroid was left. The operation was done under ethylene anesthesia and lasted one hour and fifty minutes.

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DISCUSSION

DR. KINLOCH NELSON, Richmond: I enjoyed Dr. Chapman's paper very much and think he has brought up a subject which all of us will have to consider from time to time.

About two weeks ago we recommended this operation to a man who had been incapacitated for two years by cardiac failure on the basis of arteriosclerotic heart disease with hypertension. He and his family refused. Yesterday, at home, he again presented the picture of overwhelming decompensation, although he had been in fairly good condition after some time in the hospital. The point is that in this case no procedure could have gotten a worse result than that which followed ordinary measures, as death is obviously imminent. Any treatment, operative or otherwise, which might offer relief, even if only symptomatic, appeared advisable.

In the Medical College of Virginia hospitals three patients from the service of Dr. W. B. Porter have had this operation performed by Dr. I. A. Bigger. A brief summary of these cases will show some of the questions which arise.

Case I.—W. V., a colored male, giving his age as 38, was seen in August, 1933, with mild cardiac failure on the basis of arteriosclerotic heart disease with hypertension and auricular fibrillation. The blood Wassermann was positive. His clinical appearance suggested hyperthyroidism. After a short stay he improved considerably and was discharged.

Three months later, November, 1933, he returned in extreme decompensation. Wassermann was positive. Basal metabolic rates were plus 55, plus 30, and plus 32. He was given Lugol's solution for twenty-three days. Improvement was marked. Basal metabolic rates were minus 3 and plus 20. After thirty-eight days in the hospital he was discharged in December, 1933.

Two months later, February, 1934, he again returned with marked heart failure. After three weeks in the hospital there was considerable improvement. Basal metabolic rates were plus 22 and plus 8. Lugol's solution was not given on this admission. On March 10, 1934, total thyroidectomy was done. Pathological report: Diffuse non-hyperplastic goiter. His post-operative course was complicated by pulmonary involvement thought to be bronchopneumonia. Recovery from this was gradual and he left the hospital April 4, 1934, twenty-five days after operation, in good condition.

Two weeks ago, that is seven months after operation, he was well and going about as usual.

In this case certain questions which naturally arise make the evaluation of the relief apparently afforded by this operation quite difficult. It is possible that hyperthyroidism was the fundamental dysfunction which resulted in the repeated cardiac failure, and as thyroidectomy in such cases has long been known to improve or "cure" the cardiac failure, presentation of this case may not seem germane to the subject. This point is not settled by the elevated basal metabolic rate, well-known to occur in cardiac failure, where the determination is made by the customary indirect method. Whatever the primary difficulty, this man seems to have been greatly helped by the operation.

Case II.—F. M., 58-year-old white man, was first admitted in March, 1934, suffering from mild cardiac failure with attacks of lower substernal pain and dyspnea, especially nocturnal dyspnea, of three or four months' duration. Several of the more severe attacks of substernal pain had been accompanied by rather marked elevations in temperature. After two weeks of medical treatment he left the hospital somewhat improved.

Two months later, May, 1934, he returned with his condition unchanged, except that the substernal pain had

been less troublesome. Had been confined to bed and the chair in his room. He remained in the hospital one week without improvement.

Three months later, August, 1934, he again entered the hospital. No appreciable difference in his condition was noted. Dyspnea, orthopnea, and nocturnal dyspnea were marked. Basal metabolic rates were plus 7 and minus 2. After two weeks in bed on medical treatment there was no improvement. On September 3, 1934, after ten to eleven months of continuous medically treated, yet unimproved, cardiac failure with the diagnosis of arteriosclerotic heart disease, total thyroidectomy was done. Pathological report: Parenchymatous goiter. There was a post-operative lung complication from which he gradually improved and left the hospital on September 15th. The basal metabolic rate was minus 18. Symptomatic improvement was striking, especially with regard to the dyspnea and orthopnea. He was able to sleep flat in bed all night, something he had not done in many months.

On September 24, 1934, three weeks after operation, he returned with acute cardiac failure and chest pain, the whole picture strongly suggesting coronary thrombosis. Since that time he has gradually improved and now seems fairly well. Symptomatically, he is better than he has been at any time during the six months prior to operation. Basal metabolic rate is now minus 31. Ascites, previously marked, has begun to return.

In this case the operation seems to have had little effect on the progress of the disease. Relief of symptoms has been marked. The patient himself is well pleased with the procedure. Enough time has not elapsed to evaluate properly the real result.

Case III.—C. T., colored male, giving his age as 47, entered the hospital on September 1, 1934, in advanced cardiac failure. There had been several similar previous attacks in which compensation had returned after long periods of rest and medical treatment. His case was diagnosed arteriosclerotic heart disease with moderate hypertension and auricular fibrillation. After twenty-five days in the hospital on rest, sedatives, digitalis, and diuretics, there was no particular change in his condition. Basal metabolic rate was minus 4. Total thyroidectomy was done on September 26, 1934. Pathological report: Normal thyroid. In the short time since operation there has been slight symptomatic improvement. Ascites, which required aspiration on several occasions pre-operatively, has continued to reaccumulate. Sufficient time has not elapsed to judge the results adequately.

In conclusion, I believe all of us appreciate the seriousness of such a procedure in such patients. Yet, in these cases, we are dealing with hopeless invalids whose practically constant discomfort is not alleviated by any known adjustment of the customary well-tried remedies. Even temporary symptomatic relief, such as that obtained in Case II, may be worth while, and in my opinion should be offered to the patient.

It seems almost banal to reiterate that this relatively drastic measure should be reserved for those cases in which careful application of well-known and well-tried remedies have proven ineffectual.

I am very grateful to Dr. Chapman for allowing me this opportunity to take part in the discussion.

DR. WILLIAM B. PORTER, Richmond: The use of ablation of the thyroid gland in the treatment of heart failure, either of the congestive type or heart failure with pain, is so new that one hesitates to predict its future or to recommend it as a procedure of merit without reservation. It is true that the report by Dr. Blumgart and our own experience with the procedure create a certain amount of cheerful optimism.

The operation is designed primarily not to cure heart disease, but rather to adjust the patient by reduction of the metabolic rate to his handicap. As I said this morning, a patient with heart disease who is overweight, may be adjusted to his existing physical handicap by a reduction of weight. This is merely an adjustment of the patient to his physical defect.

Dr. Nelson, in his discussion, overlooked one of our most important patients, for this man was able to resume physical work and has remained out of the hospital for a period of one year, carrying on actively. Previously, he had been in a state of irreducible heart failure for a period of four months.

The introduction of this therapeutic method places a serious responsibility upon the practicing physician, for the choice of patients suitable for operation is a very difficult decision. In the first place, one must differentiate between an inadequately treated patient and irreducible heart failure. We have found that many patients recommend for thyroidectomy improved decidedly on the wards under routine hospital care. In the selection of patients with coronary disease for this procedure, one must reckon with the aspect of arteriosclerosis on the one hand and the result of thyroidectomy on the other. We know that patients with coronary disease, as a rule, die because of insufficiency of coronary circulation and that this in turn is induced by arteriosclerosis of the coronary vessels. Recent work on arteriosclerosis indicates that it is definitely concerned with cholesterol metabolism. Myxedema is characterized by marked increase in blood cholesterol and there is a marked slowing of blood flow with reduction in total metabolism. It is highly probable, therefore, that we may predispose these individuals to the development of the most serious complication of coronary disease, namely, coronary occlusion.

The procedure is too serious in its implications for us to become unduly enthusiastic. For the time being, it must remain in the hands of those physicians particularly skilled in cardiovascular disease, and the operative procedure must be done by surgeons experienced in thyroid surgery.

DR. EDMUND HORGAN, Washington, D. C.: The presentation of this case by Dr. Chapman and the discussion by Dr. Nelson make us realize that the surgeon must have a good knowledge of physiology as well as pathol-

ogy if he is going to co-operate with the cardiologist in the treatment of such diseases as angina pectoris and congestive heart failure. In doing a total thyroidectomy there is a likelihood of producing damaging effects as a result of removing the thyroid and parathyroids and as a result of operative trauma. These damaging effects are myxedema, disturbance of the calcium metabolism and, in some instances, paralysis of the recurrent laryngeal nerve.

About twelve years ago I observed that in cases of recurrent and persistent hyperthyroidism that there was a thrill and bruit of the thyroid arteries even in the cases which had had thyroidectomy performed. I came to the conclusion that all of the thyroid vessels should be ligated in doing a thyroidectomy and this practice I have carried out for a number of years. Recently, in going over a group of cases of hyperthyroidism which have been operated upon from five to ten years, we found that the patients had not only been relieved of hyperthyroidism but that they had also been relieved of the cardiac condition associated with it. It was also noted that the cases which had been considered recurrent or persistent hyperthyroidism and had been reoperated upon and had had all of the blood vessels divided and ligated that they also had been relieved of the hyperthyroidism. As a result of this study we got the idea that if thyroidectomy and ligation of the superior and inferior thyroid arteries, in case of hyperthyroidism, would bring about such a noticeable improvement of the condition of the heart that we could also improve the condition of the patient in certain cases of heart disease and angina pectoris if we ligated the superior and inferior thyroid arteries.

Consequently we looked about for a case. On December 19, 1933, I operated upon our first case and since then we have operated upon five others. The operative procedure is as follows: The thyroid gland is exposed and all the vessels at each superior pole are exposed, ligated and divided. We then ligate and divide the inferior thyroid artery on each side. If the inferior thyroid artery has branched before it reaches the gland we ligate all of the branches. Then all of the vessels at the inferior poles are ligated and divided so as to be sure of cutting the thyroidea ima artery.

The question which naturally arises is this: what are we actually doing and what do we hope to accomplish by such an operation? We are separating or dissociating the thyroid from the sympathetic nervous system and we are cutting down the blood supply to the thyroid gland. We are doing an operation which does not produce any immediate or late damaging effects upon the patient. We are accomplishing this: First, stimulation of the thyroid gland is prevented by cutting the sympathetic nerves to the thyroid; second, the normal interrelationship of the innervation of the heart and the thyroid is interrupted; third, sensory fibers of the sympathetic nervous system to the heart are cut; fourth, the normal blood supply of the thyroid is markedly reduced by dividing and ligating the vessels; fifth, the circulatory demands are lessened; and, sixth, the work of the heart is lightened.

In conclusion, I should like to say that we must not think that every case of angina pectoris or congestive heart failure can be relieved by total thyroidectomy or dissociation of the thyroid from the sympathetic nervous system. We have to be careful in the selection of cases. Only patients who are strong enough to go through an operation should be accepted by the surgeon. After operation, it is most important that the patient be kept under close observation.

DR. J. MORRISON HUTCHESON, Richmond: I wish to emphasize, in a very few words, one point brought out in the discussion of this subject, and that is that any operation upon the normal thyroid for the relief of cardiac pain or of congestive heart failure is to be regarded as a clinical experiment and not as an established mode of treatment. Whatever its possibilities may be, we have not yet sufficient data to guide us in the selection of cases or in any sort of conclusion as to what this treatment is worth.

DR. JAMES A. LYON, Washington, D. C.: I appreciate this opportunity of listening to Dr. Chapman's very able paper and to Dr. Nelson's discussion of the case. As Dr. Horgan has stated, we have operated upon six patients during the past years. Five had angina pectoris. One of the patients with angina pectoris had anginal failure previous to operation. For two weeks, even with absolute rest in bed, he continued to have attacks. After a months rest in bed, he was not able to get up and move about without great pain. On December 29, 1933, Dr. Horgan dissociated the thyroid from the sympathetic nervous system and reduced the blood supply to the thyroid. Six days following the operation the patient had an attack of precordial pain. Since then, over a period of ten months, he has had no attack of substernal pain and no heart consciousness. He is able to work in his garden, to go up and down stairs, and to walk some fifteen blocks from his home to my office without discomfort.

The second patient, a renovator, aged 38, had been hospitalized on four occasions during the six months from October, 1933, to March, 1934, because of congestive heart failure. He has chronic arterial hypertension, aortic regurgitation and stenosis and cardiac hypertrophy. During his last period of hospitalization he had typical attacks of angina pectoris. He was operated upon May 4, 1934. Since that time he has had no further substernal pain nor recurrence of his congestive heart failure. But he is dyspneic upon exertion and has occasional nocturnal attacks of cardiac asthma.

Our third patient, a window dresser and salesman, aged 28, has been under observation for two years. Whenever he walked rapidly for a block or two or became excited, his heart beat fast and forcefully and he became short of breath. During his childhood he had two attacks of acute rheumatic heart disease. He has aortic regurgitation and stenosis, mitral regurgitation

and stenosis, and arterial hypertension. He was operated upon July 25, 1934. Since the operation he has had no further heart consciousness. He is now able to work regularly for eight to ten hours daily. The attacks of paroxysmal tachycardia are much less frequent and less prolonged. The forceful pulsations of the left ventricle and carotids have been lessened. The patient rests well during the night, can sleep lying flat in bed, and is not disturbed by the beating of his heart. Because of the valvular defects, this improvement may not be permanently maintained.

The fourth patient, a taxi driver, aged 44, had for a year been having attacks of substernal pain following exercise and over-eating. During a two-weeks' period of hospitalization in June, 1934, he had repeated attacks of angina pectoris. After his discharge from the hospital, unimproved, he remained in bed at home, but the anginal attacks continued to recur. On August 1st, the Wassermann and Kahn tests of the blood were plus 3. On August 6th, Dr. Horgan operated. Since the operation the patient has had no recurrence of the anginal pain. His exercise tolerance is satisfactory, and he has resumed his former occupation. Treatment for syphilis was not instituted until six weeks after his operation.

Two other patients, a woman, aged 73, and a drug-store proprietor, aged 60, have been operated upon within the last two weeks. Both have had a rapid convalescence and both have been relieved of anginal attacks of long standing.

Dissociation of the thyroid from the sympathetic nervous system and reduction of the blood supply to the thyroid is a much simpler operation than is total ablation of the gland. It has, with us, accomplished beneficial results without subjecting the patient to the possibility of myxedema.

DR. CHAPMAN, closing the discussion: I certainly agree with those who have discussed the paper that total ablation of the thyroid gland is a very radical procedure and still in the experimental stage. Sufficient scientific study has been done, however, to justify this operation in a few selected cardiacs. The improvement in the cardiac symptoms of the case reported, I believe, justified the operation. Our studies since then have failed to reveal the cause of the edema.

Dr. Lyon reports cases of angina pectoris in which ligation of the large vessels to the thyroid gland have given as satisfactory results as those cases of angina pectoris who have had total ablation of the thyroid gland. This relief, if temporary, could be easily explained, but the permanent relief is contrary to the work of the Boston group.

THE BASIS FOR OR AGAINST THE USE OF DIGITALIS IN CERTAIN DISTURBANCES.

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In 1785, William Withering[36] wrote of digitalis: "So far as the removal of the water would contribute to cure the patient, so far may be expected of this medicine." Forced to rely solely on his clinical observations, it is not surprising that Withering failed to understand the basic action of the drug and looked upon it chiefly as a diuretic—an error that led him sometimes to employ it in conditions where no benefit could be secured, as is evident from his statement that it failed in cases of "encysted dropsy." Since Withering's time, much has been learned of the action of digitalis, both through animal experimentation and bed-side observation, but it is discouraging to realize that today, almost a century and a half after the appearance of Withering's classical monograph, the use of the drug in some cases is directed largely or entirely by empiricism. Are we making errors similar to that of Withering when he administered digitalis to patients with "encysted dropsy," where good cannot be accomplished by it; even more serious, are we using it in conditions where its effects are actually detrimental? On the one hand, it is desirable to avoid useless or harmful medication with digitalis; however, when numerous and dependable clinical observations clearly indicate a beneficial effect, use of the drug should not be refrained from merely because we cannot explain fully how these effects are brought about.

According to Lewis,[20] at least 70 per cent of cases of congestive failure are accompanied by auricular fibrillation; it is here that the most striking results are obtainable by intelligent administration of digitalis. The action of the drug is, in all likelihood, twofold. In the first place, through depressing conductivity it reduces the number of impulses from auricles to ventricles and allows the latter to relax more fully and also to enjoy a longer rest period for recuperation. In addition, there is good rea-

son to believe that the direct muscular action is also of importance; certainly the tonicity of the muscle is increased and, most probably, contractility, too, is favorably influenced,[10-29] so that there is an increased force and extent of the systolic excursions.

It has, apparently, been quite conclusively established that in these patients with heart failure digitalis leads to an increase in the cardiac output,[8-12] although it has been erroneously inferred from experiments on normal, unanesthetized dogs[16] and patients without cardiac failure[4] that the reverse was true.

Administered in proper dose to patients with auricular fibrillation and cardiac failure, digitalis may, then, be expected in most instances to bring about favorable, even brilliant results, results which are explainable and to be expected on the basis of our knowledge of the physiological actions of the drug.

A point which still is overlooked far too often is regarding the advisability of continuing the administration of "maintenance" doses of digitalis in the fibrillating patients after relief from pressing symptoms has been afforded by thorough digitalization. As aptly put by White, ". . . the lives of cardiac patients are often prolonged for years, while activity, and even highly remunerative work, may be maintained with few breaks for years through the simple, intelligent, and constant use of digitalis."[35] As clearly brought out by Gold,[14] there is no set quantity of the drug to be used in every case; the amount necessary must be determined by observing the reaction in each individual, but, as a rule, it is from one to two 0.1 gram tablets (one to two cat units) daily.

As recently as 1925, no less an authority than Cushny[10] wrote: "In hearts which present no anomalies in rhythm, but which are unequal to carry on a sufficient circulation, the effects of digitalis are still a matter of question." He condemns, however, the "exaggerated statement" that the drug was of value only in auricular fibrillation. Of recent years, Christian[5-6] has strongly advocated the use of digitalis in non-fibrillating heart failure; Wenckebach,[34] likewise, believes that administration of this drug is indicated in heart failure, regardless of its etiology.

Beckman[1] maintains that the results from digitalis administration in non-fibrillating heart failure may be no less striking than when fibrillation is present, an opinion that is shared by Marvin[22] and by Luten.[21]

If we accept that digitalis administration is beneficial in congestive failure not associated with auricular fibrillation, we come to the next question, namely: How does it bring about this benefit? Slowing of the rate, with increased diastolic filling and a longer rest period for the muscle may be a factor in some of the cases; in others, however, the drug has no influence on rate and yet improvement seems to occur. The assumption of a stimulant action on the muscle, "a whipping up," as it were, seems scarcely compatible with prolonged improvement, unless this temporary stimulation restores a disturbed balance of some sort. The influence of the drug on tonicity, through which there is a shortening of the muscle and reduced dilatation and greater functional efficiency may play an important role in bringing about improvement.

Of especial importance is Christian's advocacy of digitalis administration in "chronic non-valvular heart disease."[5-6] It is pointed out that rheumatic heart disease starts early in life and that a fatal termination is to be expected within twenty years of the first signs of cardiac involvement; syphilis, too, is "an incident in the bloom of life," and when syphilitic aortitis has advanced to the stage of causing symptoms, life-expectancy is reduced to five years. There is, because of these factors, a rapidly falling curve for the incidence of rheumatic heart disease in patients over thirty years of age and of syphilitic aortitis in those over forty; in spite of this, "After the forty year level, hospitals have usually an increasing rather than a decreasing rate of admissions for cardiac disease."

A striking feature of the cardiac involvement in many of these patients over forty is the absence of pronounced structural change in the heart muscle as revealed at post-mortem; indeed, the figures of Fitzhugh[13] indicate that gross or microscopic myocardial involvement is encountered scarcely if any more frequently than in patients of corresponding age periods who had exhibited no evidences of functional cardiac abnormalities during life.

In patients of this type, Christian does not await the onset of congestive failure for commencing digitalis medication. "Increasingly," he writes,[6] "I advise these patients continuously to take a daily dosage of digitalis. . . . I believe patients who have had the slightest evidence of cardiac inefficiency

profit from such continued digitalis ingestion. . . . The belief that digitalis is useful only in the presence of auricular fibrillation seems still to persist, though there is much striking clinical evidence against it, especially strong for this particular group of patients."

It is difficult to explain the favorable influence of digitalis in patients where the condition has not progressed to the point of congestive failure. Attempts have been made to show by animal experiment that digitalis favors in some unexplained way nutritive conditions for the myocardium and that animals fed digitalis over long periods of time show greater cardiac hypertrophy than is the case in the controls. These experiments are far from convincing, however, and more recent investigations fail entirely to substantiate the earlier reports. One must recognize the possible influence of suggestion in these early cases of cardiac derangement; indeed, some believe that any benefit following the administration of digitalis before the occurrence of congestive failure must be ascribed to the psychic influence.

Cardiac manifestations in patients with hyperthyroidism have long been recognized; indeed, the earlier observers considered this disease as involving the heart primarily. More recent studies seem to have established quite definitely that there is no specific cardiac lesion in hyperthyroidism, the functional and structural abnormalities of the heart encountered being the result merely of a speeding up of the rate and the prolonged over-activity.[19,28,33]

Theoretically, at least, it would seem that digitalis should be administered to patients where the condition of the heart appears to call for it, regardless of the presence of thyrotoxicosis. Some years ago, however, Plummer, of the Mayo Clinic, expressed the belief that digitalis was injurious in the presence of hyperthyroidism, a belief that is still held at this clinic, judging from the more recent utterance of Kepler.[18] Other clinicians contend that the employment of digitalis in cases of hyperthyroidism with congestive failure is of distinct value, and figures have been presented, indicating the routine use of the drug does not at all increase the mortality rate in these patients.[17]

In collaboration with Dr. E. G. Williams and Dr. Gudger, the attempt was made to ascertain by animal experiments whether digitalis is harmful in the presence of acute hyperthyroidism. For this purpose, a series of nine cats received daily feedings with dried thyroid substance for at least eight days. At the end of this time, most of the animals showed a definite loss in weight, slightly elevated temperature, and an increased heart rate. In spite of the existence of these signs of hyperthyroidism, the resistance of the animals to digitalis, as determined by the method of Hatcher and Brody, was practically the same as that of a series of six control cats. Six dogs were fed dried thyroid for a period of nineteen days. There was a marked loss of weight in only two of the animals, but others showed great excitability and rapid heart rate at the end of the period of thyroid feeding. The average "Hatcher" dose of a tincture of digitalis as determined on a series of eight control dogs was 1.25 c.c. per kilogram body weight; the average for the six thyroid-fed animals was practically the same: 1.3 c.c. per kilogram. These results lend no support to the view that there is increased susceptibility to digitalis in the presence of acute hyperthyroidism; on the other hand, they do not prove that digitalis administration is beneficial or even innocuous to the human patient with thyrotoxicosis.

The advisability of administering digitalis to patients with lobar pneumonia has long been the subject of discussion. Until comparatively recently, in spite of the contrary view held by Mackenzie, Carhart, Brunton and others, the general consensus of opinion among clinicians favored the use of the drug in this disease. The soundness of the practice seemed to have been established by the work of Cohn[7] and his associates at the Hospital of the Rockefeller Institute; and additional support was offered in the reports of Stone, Phillips, and Bliss,[32] of Brooks and Carroll,[3] and Stone.[31]

What basis exists for the employment of digitalis in pneumonia? The earlier observers were impressed by the evidences of failing circulation, as well as by the discovery that cardiac lesions could be demonstrated in patients dead of lobar pneumonia. More critical study, however, has failed to establish that circulatory depression occurs uniformly in this disease; indeed, as recently pointed out by Cole,[9] in some cases the blood-pressure may be but little affected, the pulse of good quality, and the heart sounds loud and clear almost to the moment of exitus. The work of Porter and his associates,[24] of the Harvard Medical School, likewise, indicates that in experimental pneumonia the cir-

culation is not primarily involved; death of the animals resulting from failure of the respiration. It would seem, therefore, that the *routine* administration of digitalis in pneumonia is an irrational procedure, governed solely by empiricism.

On the other hand, Cohn,[7] and more recently, De Graff, Travell, and Yager,[11] have clearly demonstrated that cardiac involvement occurs in a certain proportion of patients ill with pneumonia. Especially important is the observation that auricular fibrillation is encountered in approximately 4 per cent of all pneumonia patients.[9] Certainly a fibrillating heart is severely handicapped at the outset in attempting to carry on the circulation through consolidated lung tissue; moreover, the occurrence of cardiac dilatation, with or without fibrillation, would seem to constitute a theoretical reason for the employment of digitalis in pneumonia.

No attempts seem to have been made to determine directly by animal experiment the influence of digitalis administration in the presence of pneumonia. When animals are practically moribund following the injection of diphtheria toxin, their resistance to digitalis poisoning is reduced, but this may be explained as the result of decreased blood volume. Of course, it is not permissible to conclude from the results of experiments on diphtheria-poisoned guinea-pigs or cats what the reaction of patients suffering from pneumococcus infection would be; nevertheless, Myers[23] has recently attempted to do this in a paper that is remarkable not only for such an unjustifiable assumption but also on account of the author's apparent ignorance of some previous investigations he refers to and also because of reported results that are unique. In spite of Myers' contribution, it may be safely asserted that no evidence of a satisfactory nature for or against the use of digitalis in pneumonia has been obtained by animal experiments.

The most exhaustive investigation as yet carried out in the attempt to determine clinically the influence of digitalis administration in pneumonia was undertaken at Bellevue Hospital and the results reported by Niles, Wyckoff, Dubois, and Woodruff.[25-37] In this study, errors committed by earlier observers were avoided, and adequate control observations were run simultaneously. Digitalis dosage was quite large but within what is generally considered safe limits; especially during the second year of the investigation. Data were secured on 742 patients; careful analysis revealed that digitalis routinely administered was definitely not of benefit; indeed, the general impression is gained that a deleterious influence was exerted by the drug. Especially discouraging were the results from digitalis administration to patients with auricular flutter or fibrillation. It is true that the number of such cases was small; seventeen controls and sixteen digitalis-treated; nevertheless, the occurrence of a mortality rate of 87.5 per cent in the digitalis-treated patients as compared with one of 52.9 per cent in the untreated controls does not indicate that the drug exercised a "life-saving influence" in this condition which is supposed to constitute the most important indication for the use of digitalis.

Relying chiefly on other therapeutic measures, a very accurate knowledge of the actions and limitations of drugs is scarcely to be expected of surgeons. When one considers the use of digitalis by many surgeons, it is obvious that pessimism as to their pharmacological knowledge is amply justified. So often, unfortunately, digitalis may be used in a routine manner pre-operatively, with no attempt at selection of cases; almost as often, the drug is administered to those patients in a critical condition after operation without any effort, apparently, being made to determine the factors directly responsible for this condition. There is no doubt that circulatory involvement is a matter of prime importance in some of these cases, but, in other instances, the circulation may be involved only secondarily; moreover, even when the circulation is involved, the disturbance may be vascular in origin with a heart normal in structure and function up almost to the moment of death.

Let us consider somewhat in detail the matter of traumatic shock. It has been fairly conclusively shown by recent investigators[2] that the falling blood-pressure and development of collapse in this condition is due to a loss of fluid from the cardio-vascular system, this loss being due to extravasation of blood and of plasma into the traumatized region. Especially interesting has been the observation of Blalock[2] that of the therapeutic measures resorted to in the treatment of experimental shock, ". . . digitalis has been consistently the most harmful and has uniformly been without benefit." Apparently, shock developing after severe burns is due to the same loss of fluid from the vessels; in both forms of shock, what has actually occurred is equivalent

to hemorrhage. This being the case, the observations of Gold,[15] showing that animals bled half their estimated blood volume are far less resistant than the controls are to poisoning by crystalline strophanthin (ouabain), are of considerable significance. The routine administration of large doses of digitalis, especially by intravenous injection, to patients in surgical shock or after massive hemorrhage not only is irrational, but, from Gold's results, would seem to be accompanied by definite danger.

One should not lose sight of the fact, however, that patients requiring surgical operation are not immune to heart disease. It is a fact that is not generally appreciated that the cardiac patient may stand operative procedures remarkably well, Sir Thomas Lewis going so far as to write: "It will simplify if it is here said that there is no condition of the heart, other than one which is itself immediately jeopardizing life, that prohibits operations being undertaken to meet a grave emergency."[20] Obviously, in these cardiac patients requiring operation, digitalis should be administered as the indications for it exist.

There is still, in all probability, much that is to be learned of the action of digitalis, and even more of altered function in pathological states. The final word as to the uses and limitations of the drug cannot be spoken until these gaps have been filled. In the present state of our knowledge, however, it has been clearly established that digitalis is of great value in certain conditions, of questionable service in some, and probably injurious in others.

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THE DIAGNOSIS OF SYPHILIS OF THE GASTROINTESTINAL TRACT.*

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Granulomatous masses occur in various parts of the body and are found in the gastrointestinal tract where they are more frequent in the stomach and colon. There has been much confusion in the past concerning the specific nature of these inflammatory tumors and, while much has been done in recent years to clarify the problem, doubt exists in the minds of many clinicians of their specific nature. The objects of this presentation are, first, to show that syphilis is the cause of certain of these granulomas, and, second, to suggest certain diagnostic criteria by which the lesion may be identified clinically.

These granulomas may be due to amebiasis, syphilis, tuberculosis and chronic pyogenic infection, the last being classed as non-specific granulomas. There has been no doubt of the tuberculous and amebic origin of these masses although Moschcowitz and Wilensky[1] have shown that some of the cases reported as tuberculous are in reality non-specific (pyogenic). About the syphilitic ones, however, there has been much argument, and many physicians, pathologists and surgeons still feel that syphilis is in fact not a cause of these lesions.

Unfortunately the microscopic pictures of these granulomas, regardless of the cause, are very nearly the same, there being fibrous tissue in various stages of development, deposits of lymphocytes and giant cells and necrotic tissue. The final word would seem to lie with the discovery of the causative organism in the mass. This, again, unfortunately, is very difficult to accomplish, as in all chronic lesions, but it has been done with each of these types although only rarely in the tuberculosis and only once without doubt in the syphilitic lesions.

It would be well at this point to describe the lesion. Meyer and Singer[2] have given an excellent description of the gross appearance of it. In the early stages there is a deposit largely in the submucosa which is soft and pliable and may actually escape detection at operation in spite of the large lesion demonstrated by X-ray examination. Later fibrous tissue is formed and all coats thickened until a mass is formed. The peritoneum over it is thickened, congested and often edematous. The whole area is very firm and may be adherent to surrounding structures. On opening the lumen a large ulcer is seen. It is usually shallow with granulating base and as a rule involves the entire circumference of the lumen. Lesions outside the stomach or bowel are frequently seen and help to identify the mass. The most frequent of these are regional lymph nodes which are enlarged and soft. Gumma may be found in the liver. The microscopic appearance as described by Dr. Pusch in reporting one of our cases is as follows: "The floor of the ulcer was composed of a thin layer of necrotic celluar debris, overlying young granulation tissue densely infiltrated with lymphocytes, plasma cells, and fewer polymorphonuclear leucocytes, in part interwoven with muscularis mucosae. Several gummatoid areas were observed but no classical gummata. Beneath, the increased thickness of the mucosa was due to edema, fibroblastic proliferation, and dense well-circumscribed, perivascular and perilymphatic aggregations of lymphocytes and plasma cells. These sharply defined perivascular groups constituted the most constant feature of the histopathology. They extended throughout the wall of the stomach, through the hypertrophied musculature into the serosa, and also far beyond the margin of the ulcer, presenting a greater extent of inflammatory response than is usual in non-specific inflammation. They occurred partly as mantles about the blood vessels, and partly as eccentric nodules associated with adventitia. For the most part the blood vessels themselves were not altered, although in a few instances both arterioles and venules had narrow lumina and thickened walls effected by medial hypertrophy and fibroblastic proliferations involving intima, media and adventitia;

*Read before the Richmond Academy of Medicine, January 8, 1935.
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in some instances inflammatory infiltration of the vessel wall itself occurred. The margin of the ulcer was abrupt in some areas, composed of intact, edematous hyperplastic mucosa infiltrated with plasma cells and lymphocytes. In other portions such a mucosal border was separated from the ulcer proper by a narrow tapering zone in which the superficial half of the mucosa was necrotic, ragged and mixed with inflammatory exudate. At times occasional miliary gummata were found with or without necrosis or small giant cells. The regional lymph nodes presented essentially the same changes."

What evidence is there that these granulomas may be syphilitic? In the first place, the response to specific treatment has been satisfactory in many cases. Karshner[3] reported two cases with obstructing lesions of the colon sufficiently relieved by treatment to avoid operation. The author[4] reported a similar case in the stomach and a number of others have been reported. That the lesion does not entirely disappear in treatment and that some cases are not benefited by treatment is explained by the presence of intense fibrosis which is probably due to secondary infection as well as the specific cause. This failure of specific treatment to cure all cases has been used as an argument against syphilis as the cause of the lesion. Yet one would hardly question the syphilitic origin of certain central nervous system lesions and vascular degenerations because they were not restored to normal by specific treatment. The Spirochaeta pallida may be eradicated but the damage done to structures will not be repaired nor will fibrous tissue be absorbed. Warthen[5] and McNee[6] have reported the finding of spirochetes in the tissues of these lesions. Singer and Dyas,[7] however, are not willing to accept these as authentic and Pusch[8] says that "the demonstration of these organisms in sections of any tertiary syphilitic lesion always has been uncertain." Harris and Morgan,[9] however, have definitely recovered Spirochaeta pallida from a typical stomach lesion. They macerated portions of the stomach removed at operation and of an adjacent lymph node and injected them into testicles of young rabbits. With each they produced typical experimental primary luetic lesions from which they recovered innumerable typical spirochetes with which they reproduced the same lesion. At the Medical College of Virginia we have repeated this work on two occasions with resected stomach lesions typical of syphilis, but in neither case were we successful in recovering the organism. So far as I know this has not been confirmed and alone it might not be accepted, but with the other evidence it adds all that was necessary to remove the doubt of the syphilitic origin of certain of these granulomas. If one accepts this as true, it is then necessary to formulate criteria by which this diagnosis may be properly established. Some have held that Spirochaeta pallida must be demonstrated in the tissues. This is most difficult and has rarely been done in other tertiary syphilitic lesions, so is manifestly unfair as a requirement for diagnosis. The criteria of Harris and Youmans[10] modified somewhat seems adequate and fair. They are:

1. Evidence of organic disease of the stomach or intestine which on X-ray examination shows the deformity characteristic of syphilitic granuloma.
2. A comparatively young individual.
3. The presence of other evidence of syphilis.
4. A qualified improvement under anti-syphilitic treatment.
5. In cases operated upon, the presence of an inflammatory mass.
6. When tissue is removed, demonstration of changes compatible with syphilis.

The first of these is not generally agreed upon. Practically all textbooks on Roentgenology say there is no characteristic picture of this lesion, and most individuals say that it is indistinguishable from cancer. D. S. Lewis[11] has given the best description of the lesion in the colon. He says: "The barium enema picture is most typical, * * * there is a long, small channel fading gradually into the undilated hypertrophied colon above. This is in sharp contrast to the localized irregularity of the filling defect of carcinoma which, if obstruction be present, is followed by a markedly dilated colon above the stricture." The typical appearance is, then, a smooth tube with a funnel-shaped entrance and exit. This picture may of course be modified by other factors and by variations in the intensity of the fibrosis. In the stomach where it occurs most often in the pylorus this tube-like deformity has the appearance of a funnel, but there will be more variations than in the colon lesions. This X-ray appearance may be produced by carcinoma but it is unusual for the luetic lesion to produce any other deformity. As I said in another discussion of this subject,[4] it is "not exclusive to

syphilis, but is sufficiently typical to be characteristic and should not be classed as indistinguishable from cancer."

The second is in striking contrast to cancer. The average age of our ten patients with this lesion was thirty-six and one-half years, while the average age for a group with cancer of the stomach was fifty-nine years.

The third is usually easy to demonstrate by history, physical examination, or laboratory tests. Two of our patients had negative blood Wassermann tests but both had had treatment and both had other obvious luetic lesions.

The fourth has been discussed above; the results of treatment are dependent on the intensity of the fibrosis and damage to the organ.

The fifth has been discussed particularly by Meyer and Singer[2] who have had a large experience. They feel that the lesion has a characteristic gross appearance evidenced by its inflammatory nature with congestion and edema and with the firm feel of a thick walled tube. The smoothness and regularity of the lesion are in contrast with cancer, as is the small size of the mass compared to the large deformity shown on the X-ray film. In early cases with definite X-ray deformity, it may even be difficult to demonstrate at operation. We have had one such case.

The sixth has been discussed above with quotation from Pusch who is in general agreement with other writers. As was said before, the microscopic appearance is nearly the same as that of other granulomas, so that, on this basis alone, it would be difficult to prove its syphilitic origin.

The clinical picture presented by patients with this lesion is not characteristic. The stomach cases present symptoms very similar to those with cancer except the loss of weight is not so striking and the patients are usually much younger. They complain of vague indigestion, gas, epigastric pain, and, finally, when pyloric obstruction develops they have nausea and vomiting. Bleeding from the ulcer is frequent and at times very profuse. Gastric analysis shows a total absence of free hydrochloric acid and X-ray examination usually shows the funnel-shaped deformity described above. When the bowel is involved they have abdominal pain, diarrhea with blood and mucus, and finally obstruction with pictures varying according to the location. The blood Wassermann reaction is almost always strongly positive.

There may be other manifestations of syphilis. The most important are severe secondary anemia and damage to the liver. Two of our patients died from these complicating factors. Others had aneurysms, condylomata, and skin lesions. We have had ten cases, eight of the stomach and two of the colon. All of them have been reported except one. A summary of this case is as follows:

V. M., a married colored female of 33 years (St. Philip Hospital No. 22877) was admitted to the hospital on September 3, 1934, complaining of stomach trouble. She had been treated in another city for ulcerated areas about the vulva and this was continued by a urologist here until five months ago when the lesion healed. The bladder was incontinent but this was thought to be due to the damage done by the ulcerated vulva because there were no signs of central nervous system lues. During this treatment she had had long series of injections of salvarsan, mercury and iodides by mouth, and tartar emetic. On two occasions she had developed arsenical skin rashes. She had had only one pregnancy and this resulted in a miscarriage. For about a year she had suffered with gas after eating, and during the last three months she had rather severe griping pain in the epigastrium, coming soon after eating. A few days before admission she vomited a large quantity of food. She had lost about twenty pounds in weight, due, she thought, to the small amount of food she was able to take. Physical examination was unimportant except for the malnutrition and the scars on the vulva from the lesion mentioned above. The urinalysis, blood counts, and blood chemistry were essentially normal. The blood Wassermann was strongly positive. X-ray examination of the stomach revealed the funnel and tube-like deformity shown in Fig. 1. There was a residue of 50 per cent of the meal in the stomach after six hours. Gastric analysis showed free hydrochloric acid from 20 to 36 with combined acid from 10 to 16. She was operated on and a lesion found typical of syphilitic granuloma. The mass was resected and the stomach repaired by the Billroth I method. The pathological report from Drs. Pusch and Nelson was as follows: "No mucosa seen (section through base of ulcer). In its place is a zone of inflammation, of round cells with many empty capillaries, the inner edge of which is a ragged

Fig. 1.—X-ray appearance of the stomach.

necrotic layer of cells, chiefly round cells, but with some polys. The submucosa is markedly thickened by edema and fibroblastic proliferation with scattered areas of lymphocytic infiltration especially about the blood vessels. Such areas are fairly well defined. The blood vessels show thickening of the media in two instances, and some are obliterated. The musculature shows scattered areas of round cell infiltration with multiple miliary gummata. The serosa shows sharply circumscribed areas of round cell infiltration with an occasional giant cell and with extravasated red blood cells apparently due to operative trauma. A lymph node section shows nothing of note. Pathological diagnosis: Syphilitic ulcer of stomach."

Fig. 2.—Microphotograph through the submucosa showing fibrosis, edema, and round cell infiltration about blood vessels.

Fig. 3.—Microphotograph through the muscularis showing miliary gummata.

She made a good recovery and X-ray examination made four weeks later showed a good-sized stomach with no delay in emptying and no residue after six hours. She has remained well. The tissue from the stomach was injected into the testicles of young rabbits after the method of Harris and Morgan, but spirochetes were not recovered.

SUMMARY

The evidence tending to prove the syphilitic origin of certain granulomas of the gastrointestinal tract has been presented. The criteria necessary to be fulfilled in order to make such a diagnosis are presented and briefly discussed. The clinical picture is outlined and finally a case of syphilitic granuloma of the stomach is presented.

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EXTRAGASTRIC MANIPULATION FOR REMOVAL OF FOREIGN BODIES IN STOMACH BY WAY OF THE ESOPHAGUS.

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The removal of open safety pins from the stomachs of children, by way of the esophagus with the use of a tube, and without gastrotomy, has been done in various ways, of which the methods described by W. Banks Huff are good examples. Slightly different mechanical principles are involved in these methods but in the infant they expose the stomach wall to the possibility of traumatization and rupture when closing the safety pin.

I wish to describe a method which is adaptable for the removal of safety pins and some other objects, which does not necessitate traumatization of the stomach wall, and to submit a report of two cases in which I used the method with success. These cases were admitted to the surgical service of Dr. Edmund Horgan, at Children's Hospital, Washington, D. C.

Case 1.—An eight-month-old white male child was admitted to the Children's Hospital on July 18, 1930 (Case No. 30-1071). The child had swallowed an open safety pin that morning; he was extremely irritable and excited and had a temperature of 101.8 degrees per rectum when seen by me. He had been taken since the accident to three other hospital dispensaries in the city, at one of which an unsuccessful attempt had been made to remove the foreign body through an esophagoscope, for, until that time, the object had remained in the esophagus. The parents then became insistent that the object be removed surgically.

The past history and family history, the physical examination and routine laboratory tests gave no contraindications for operation. A roentgenogram showed an open, medium-sized safety pin in the stomach. The patient was operated on the same day.

The operation performed under anesthesia induced with ether consisted of a high, right abdominal section to permit extragastric manipulation of the safety pin. After the stomach was exposed and the object located, the anesthetist, Dr. E. Macon, passed down the esophagus into the stomach a rubber catheter which encased a sliding silver wire having a loop

on its distal end. After the open safety pin was engaged in the loop by me, the anesthetist slipped the catheter down, the enclosed wire fixing the safety pin against the distal end of the rubber catheter. As the anesthetist then made steady traction on the wire and catheter, I guided the safety pin through

the cardiac orifice manually, and the catheter and wire, with the pin attached, were withdrawn by way of the esophagus. The abdominal wall was then closed in the usual manner.

A wound infection, causing some separation and leaving a small incisional hernia, complicated the otherwise uneventful recovery. The child was discharged on the first of August, 1930, two weeks after the date of admission.

Case 2.—A negro infant, eleven months old, was admitted to the Children's Hospital on July 18, 1930 (Case No. 30-3445), and discharged August 18, 1930, entirely recovered and in good condition.

The chief complaint on admission was that at intervals during the preceding month the child had had vomiting and diarrhea associated with a progressive loss of weight and slight abdominal distention, with generalized tenderness over the abdomen. Three days prior to admission, the patient had been brought to the orthopedic clinic because of a "lump in her back." An X-ray of the lower thoracic and upper lumbar spinal regions, taken at this time, showed "a metal toy, 1x5 cm., in the abdomen, probably in the small gut." The foreign body had not changed its location, as shown by a subsequent X-ray taken on the day of admission to the hospital, three days after she was seen in the dispensary.

A clinical study, including the patient's history, physical findings and routine laboratory tests, gave no contraindications to operative intervention, except that the general condition of the child was poor, being under-weight and dehydrated; accordingly, saline and glucose infusions were given intravenously in preparation for the abdominal section to remove the foreign body the morning following the day of admission.

The operation was performed, under anesthesia induced with ether, through a high, right rectus incision. As the foreign body was found to be lodged in the pylorus, it was first "milked" back into the stomach, then engaged by the wire loop of the tube which had been introduced into the stomach by the anesthetist, as described in Case 1, and similarly removed. The foreign body in this case was a small toy horse and rider made of lead, measuring 1.9x5.7 cm.

Following a convalescence which was compli-

cated by symptoms suggestive of lead poisoning, though this diagnosis was never confirmed, the child recovered and was discharged from the hospital in good condition.

COMMENT

The above descriptions, supplemented by the illustrations, serve to explain the simplicity of a technical method for the removal of foreign bodies from the stomach by way of the esophagus, and without gastrotomy, which has the advantage of being more adaptable than any previously reported method, lessens the severity of the operative procedure, and eliminates traumatization that might be caused by closing a safety pin by pressure on the stomach wall, or by gastrotomy, and does not make it necessary to interfere with the feeding by mouth after the operation.

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PROBLEMS IN BREAST FEEDING.*

JOHN S. WEITZEL, M. D.,
Richmond, Va.

First: Why are the mothers who fail to yield satisfactory breast milk increasing in number year after year?

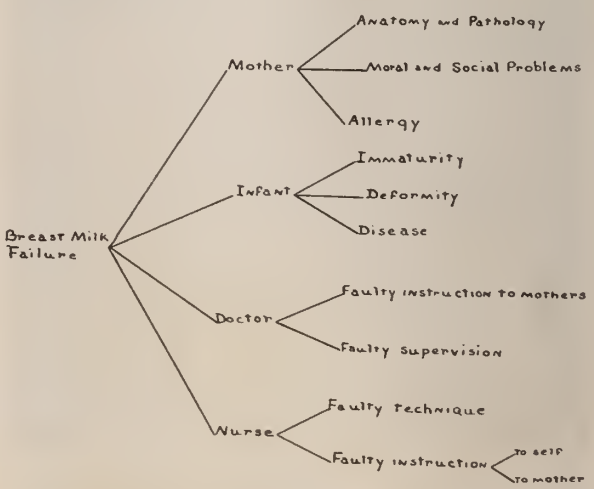
Second: Is it the fault of the mother, baby, doctor or nurse? When confronted daily with this perplexing problem, a satisfactory solution would indeed be welcome.

We acknowledge the great advantage to the infant when it receives good breast milk. However when we familiarize ourselves with all the problems of breast feeding that present themselves, after a careful study of the anatomy and possible abnormalities of the breast, together with a study of the cause of deficient milk in those breasts and the treatment necessary to correct this deficiency, I doubt seriously if the doctor or nurse can be held accountable for this unfortunate failure of nature to fulfill its duty. I believe the real cause can be placed upon the mother or baby.

I present this paper that we may face facts rather than fallacies.

When definite problems present themselves, and when present-day customs are thrust upon us, we cannot evade the issue. The outline below attempts to present this breast feeding problem briefly.

The anatomic, histologic or pathologic problem will be considered first. In the slides shown later you will notice the marked difference in the cross section of the lactating human female breast compared with the cross section of the udder of the cow. The latter is a true milk producing organ, while the human female breast is not a practical milk producing organ, especially when subjected to the customs and conditions of present-day living.



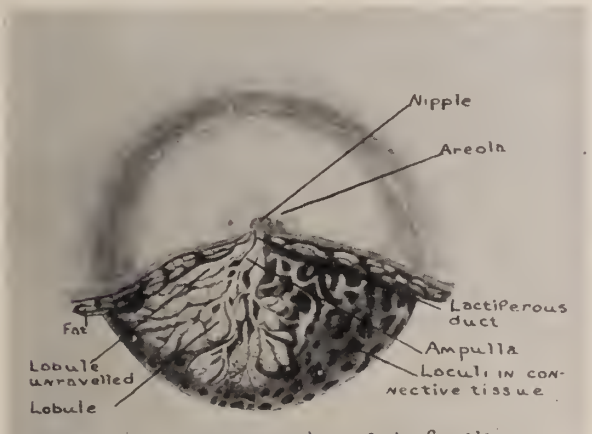
Seldom do we see a mother with an ideal breast for secreting abundant milk, namely, the spherical or conical breast, somewhat pendulous, with a prominent nipple arising abruptly from the inner margin of the areola. The breast that secretes most milk is possessed of very little fatty tissue, an abundant blood supply, and very little interalveolar connective tissue. Posture would necessarily have some

*Read at the sixty-fifth annual meeting of the Medical Society of Virginia, in Alexandria, October 9-11, 1934.

bearing on this problem. The human female standing erect or lying mostly on her back, discourages gravity towards the nipple, which should be the most dependent point; especially is this true during the most important stage of lactation, the first ten days post-partum. At this time the lactiferous ducts may easily become obstructed by the sticky, yellowish white colostrum, or from the engorged breast of the third to fifth day, and a chocked breast results. Large painful nodules form at the base of the breast, especially in the axilla, which is the most dependent point, and serious complications may arise. As soon as a stasis in the milk stream occurs, the phenomenon of involution sets in, and the fat which should be secreted as milk is returned into the circulation. Depressed, excoriated or cracked nipples, as well as abscess of the breast, must be mentioned under this heading.

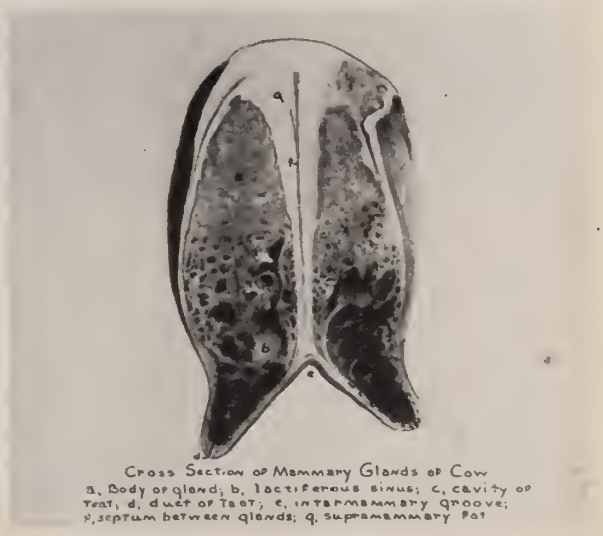
To elaborate somewhat upon the anatomic and histologic aspect of this problem, one is compelled to make a careful observation of the gross structure of the human female breast, and compare it with a natural milk-producing organ, namely, the udder of the cow.

At this point a picture of the human breast, eliciting the gross anatomy, taken from Gray's Anatomy is compared to the gross anatomy of the udder of the cow, taken from Sisson's Anatomy.



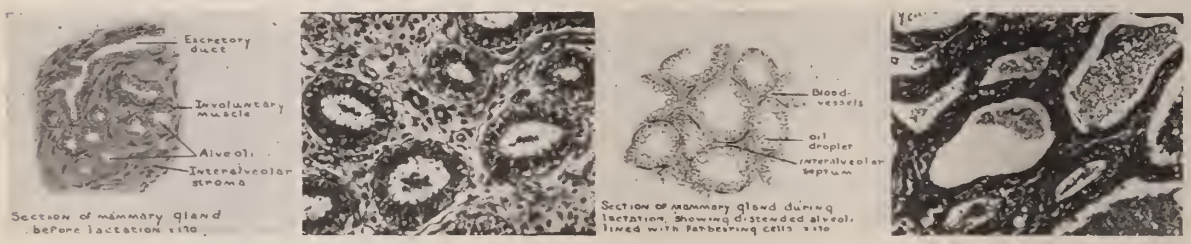
Dissection of the lower half of the female breast during the period of lactation. (From Luschka)

We observe, first, that from the natural law of gravity, the human female breast is constructed under normal condition to drain uphill, while the udder of the cow under the same condition is constructed to drain downhill, which as we all know is practical and indeed necessary. Observing more closely, we see that the secretion of a lobule and ultimately the entire lobe is expelled into a tiny constricted lactiferous duct, which later empties into the ampulla or trap, as I may call it, which is a dilatation of the lactiferous duct, and offers an ideal location for the thick tenacious colostrum and thick fat globules to accumulate, only to be asked to evacuate themselves through a second constricted portion of the lactiferous duct.


Cross Section of Mammary Glands of Cow
a, Body of gland; b, lactiferous sinus; c, cavity of teat; d, duct of teat; e, intermammary groove; f, septum between glands; g, supramammary fat

How impractical, and I might say impossible, this seems when compared to the accompanying photograph of the natural milk producer, the cow. Here we see the organ with its structure always draining to the most dependent point, with the lobules and lobes respectively communicating almost directly with a true cavity or cistern. A cistern it is, for, if one cuts the end off the teat, a finger can easily be passed well up into the substance of the gland. This, to my mind, is where the real problem lies, for, in comparing the histological structure as shown in the accompanying photographs, one, the human, taken from Piersol's Anatomy, and the other, the cow, kindly sent me by the Bureau of Animal Industry, Washington, D. C., you will notice in the non-lactating breast that practically the same order in structure is noted, that is, the basement membrane, supporting the single or double layer of cuboidal or low columnar cells, with their nuclei about midway of the cell. The interalveolar stroma, involuntary muscle fibre and connective tissue formation vary, of course, according to the type of breast, but compare almost exactly with each other.

Upon passing to the lactating breast in both the human breast and udder of the cow the same picture presents itself as shown, namely, when the alveoli become distended, the cuboid or low columnar secreting cells vary with the degree of distention of the alveoli, being low in large compartments and higher in those less expanded. The protoplasm of the cells contain minute oil droplets that occupy chiefly the



inner zone. The nucleus of the cell is pressed towards the basement membrane. The cell, projecting into the alveolus, is separated from the lumen by a thin protoplasmic stratum. Finally this thin stratum ruptures, and the oil droplets escape into the albuminous fluid that occupies the alveolus.

It is obvious, therefore, that a simple mechanical problem presents itself when the glandular structure of a breast is to secrete sufficiently or insufficiently. This mechanical problem is one of pressure. As stated in this paper, it is recommended to allow the baby to nurse each breast for five minutes every four hours, rather than nurse one breast only for the entire nursing time, thus allowing the other breast to remain undisturbed for eight hours. When the breast is not nursed for eight hours, the alveoli become so distended and the pressure from within is so great that the columnar cells become flattened out, and the thin protoplasmic membrane is not permitted to rupture. As a result, the fat globules are reabsorbed into the circulation instead of being evacuated into the alveolus as milk.

Moral and social problems require our next consideration. Dr. Abt in one of his articles on Breast Feeding makes the following statement: "The progress of civilization and the stress of modern life have introduced new problems for thoughtful reflection."

Many mothers of today feel their children should not be a burden, and are easily persuaded to neglect their duty to the nursing infant.

The necessity for mothers to work today cannot be questioned. Upon inquiry, the following data was obtained with regard to the number of married women working in Virginia: In 1910, 45,814; in 1930, 58,924—an increase of 13,000 in twenty years.

If a mother is working all day in an endeavor to support the family, it is evident that she cannot nurse her child satisfactorily during the night, and certainly not during the day, insufficient breast milk being the ultimate result of these two major problems. Mention and brief discussion of other possible causes of insufficient breast milk will follow.

One very important etiological factor that justifies our consideration is the age of the mother. Many married women defer child bearing until they arrive in the thirties or early forties.

Improper dress should be mentioned under this heading. Thought should be given to the constricting brassieres and appliances that are in common use today, exerting undue pressure upon the glandular structure, nerves and blood vessels of the mammary gland.

I acknowledge a very common cause of insufficient breast milk is the failure of the baby to empty the breast. This is frequently due to extreme pain to the mother while the baby is nursing the breast—from fissured or inverted nipples. As you know, the average mother of today cannot easily be persuaded to endure unnecessary pain.

We are told that breasts will not yield their full supply unless every drop is expressed manually after the infant has finished nursing, and Abt states that on occasions where the breasts were apparently completely emptied by the manual method, considerable amount of milk could be obtained with the electric pump. In Pfaundler and Schlossmann we find this statement: "The complete emptying of the milk glands is procured only by the nursing child; no other means can secure this result as is possible in the cow. It is impossible to empty the human female breast either with the breast pump or by the most thorough manipulations."

Manual expression is impractical from the fact that the human female breast is not constructed for satisfactory manual expression. The tender character of the breast tissue ordinarily will not tolerate manual expression, especially with an engorged breast, and this manipulation may predispose to inflammatory processes or even malignancy. Some danger of infection must be thought of when manual expression is carried out by nurse or maid.

Further consideration of the causes of weaning other than insufficient breast milk prompts me to present the results of a questionnaire sent out by the Bureau of Vital Statistics of Virginia in 1926. At that time they desired to make a statistical study of the prevalence of artificial feeding. The result was as follows:

638 infants were reported.

52 per cent of all infants weaned during the first six months were by advice of physicians. 56 per cent of this number were white, and 21 per cent were colored.

In 158 cases weaned on the mother's account, the reason for weaning was tabulated as follows:

Insufficient milk	86
Mother's milk disagreed	22
Not gaining on breast	11
Baby would not nurse	9
No milk	3
Weak milk	15
Reason unknown	12

Grouping these cases in a more condensed scheme, we might safely say:

Milk failure in quality or quantity	136
Possible allergy and reasons unknown	22

The miscellaneous causes due to mothers numbered 46, as follows:

Toxic conditions	3
Pregnancy	17
Nephritis	2
General weakness or sick	11
Contagious disease of mother	5
Abscess of breast	2
Abnormal breast	2
Mother employed	4

Of the remaining 17 cases, there were:

Mother died	5
Mother had T. B.	5
Mother denied her baby	5
Mother not interested	2

In addition to the above-mentioned causes, emphasis should be laid upon the question of allergy. Dr. Warren Vaughan makes this statement: "Anything that the mother is sensitive to will react upon the nursing infant." Allergic substance in mothers could very easily account for such conditions in the infant as colic, urticaria, intertrigo, eczema, asthma, vomiting, coryza, pharyngeal catarrh, angina, glandular swellings, middle ear catarrh or bronchitis.

In our attempt to clarify these breast feeding problems, the second in order for discussion would naturally be the infant. The faults that can be directly placed upon the infant are:

1. Prematurity, immaturity or some cerebral injury at birth.
2. Various infective disorders, such as sepsis neonatorum, icterus, eclampsia or hemorrhagic disease.
3. Indigestion from irregular or too frequent feedings or injudicious purgation.
4. Morbid condition of the infant's nose, mouth or upper air passage, such as thrush, stomatitis, adenoids, bronchitis, cleft palate, or hair lip.
5. Congenital dyspepsia.
6. A neurotic temperament.

The refusal of the infant to take the breast during the first three days of life is one of the most trying conditions with which we have to deal. The mother becomes tired and upset, her condition acts unfavorably upon her milk, and mother, infant and physician are disturbed as a result.

The doctor is the next in order in this discussion. The impression conveyed by the results of the questionnaire made by the Virginia Bureau of Vital Statistics in 1926 places most of the responsibility upon him. The thought I wish to convey is that the majority of cases seek medical advice, and the doctor, conscientious in his work, with a mother having an obvious deficiency in breast milk and with the infant's welfare at stake, would certainly be the one to recommend weaning after all means to restore the breast milk have failed.

The measures necessary to prevent weaning will be discussed under a discussion of the treatment. The nurse, being the last of the four parties involved in this problem, will be mentioned also under the same heading.

Treatment of Mother. Prophylactic: High school girls and all girls approaching womanhood should be instructed in the importance of breast feeding and the measures necessary to produce good breast milk. Those who are married should be enlightened

as to the most favorable age to bear children, that is between the ages of 20 to 35. Married women and expectant mothers should be thoroughly schooled in the proper diet, hygiene, exercise and rest, both physical and mental, as well as the necessary steps to be carried out in preventing and correcting inverted and tender nipples. All diseases and debilitating or toxic conditions should be eliminated, if possible. The mother should be thoroughly impressed with the advantages of good breast milk and to the protective substances therein, as well as its nutritive value, ease of digestion, safety and economy. Her indulgence should be insisted upon in experiencing discomfort and inconvenience.

Active Treatment: Supervise carefully the first ten days of her post-partum period with regard to her posture, as well as the technique in nursing; emphasize the point of having the baby grasp the breast well into the areola instead of the nipple only. Manual expression should be used when the baby fails to empty the breast, unless contraindicated by extreme pain. Both breasts should be nursed and both emptied when possible every four hours either by manual expression or by the electric breast pump. A tight breast binder should not be used; however, a loose sling to support the breasts well is to be recommended.

Thorough and detailed instructions in the problems of breast feedings should be given the obstetrical nurse to help her realize what an important position she occupies in bridging the relationship between mother and child. In her training the baby is put to the breast often as a matter of routine, and the many complications resulting from faulty technique and lack of patience and perseverance might mean the failure or success of breast feeding.

It is recommended that the application of 0.1 per cent hypochlorite solution by means of a compress for one minute will eradicate surface bacteria.

The outline suggested by Haynes as a guide to your management of breast feeding, so concretely expressed in six situations, should be applied when complementary or supplementary feeding is to be considered. This outline is as follows:

Mother	*Child*	
Gaining	Gaining	1
	Losing	2
Stationary	Gaining	3
	Losing	4
Losing	Gaining	5
	Losing	6

To explain this outline, I quote Dr. Royal Storrs Haynes, Professor of Diseases of Children, Columbia University:

"The ideal result of a properly conducted lactation is to have the mother's weight stationary and the baby's weight rising steadily. These two factors will determine the success and progress of lactation, and will give a better idea of the food value of the milk than chemical examination. There are six situations to be considered.

"Number 1 shows the mother is over-eating. After lactation she proceeds to reduce too suddenly, and may result in a nervous breakdown; therefore, limit the mother's diet.

"Number 2 shows mother over-eating, but unable to produce milk. Limit mother's diet, and give complementary bottle feeding.

"Number 3 shows the ideal condition, except in some instances the baby becomes too fat, in which case the time of nursing should be shortened.

"Number 4 shows mother is taking insufficient nourishment. Increase quantity and quality of mother's diet, in which case Number 4 will be transferred to Number 3 or Number 2.

"Number 5 shows mother is making milk at the expense of her own tissues, and cannot last long. An attempt should be made to change this situation to Number 3.

"Number 6 shows the mother is denying herself or is denied proper food, or has tuberculosis. T. B. should be eliminated before attempting a transformation to Number 3 or Number 1."

The problem of human lactation is complicated by the fact that the mother is not just a milk producer, but is a human being with a varied life, subject to psychic disturbances, and to demands upon her from persons other than her baby. The mental attitude of the mother may affect the quantity and probably the quality of her milk. Anxiety, fright, worry, annoyance, fear, all tend to diminish the yield, while a placid, contented mind, a good digestion and a pleased appetite tend to increase it.

The baby produces a better supply of milk, though his capacity may be less than the breast pump.

Saline cathartics, arsenic and salicylates should be withheld from a lactating mother.

During the first five days of life, if the initial loss of the baby is not more than 10 per cent of its birth weight, with a good nursing history, if the

mother has a goodly quantity of breast milk, supplementary feeding is seldom necessary.

Infants do well on one-half to two-thirds the amount of fluid which experience has shown necessary with cow's milk mixtures. This is probably due to the different protein and salt composition of human milk. Regardless of the quality and quantity of breast milk, we should be ever mindful of the fact that the best laboratory is the baby's own stomach. Giving sweetened or plain water discourages the infant to take the breast, and, if not given, predisposes to dehydration.

The stimulation period should not be less than four hours for each breast. As both breasts secrete at the same time, they become full together; it is logical to empty both rather than allow the milk in the untouched breast to be reabsorbed.

As regards the baby, it should be weighed before and after feeding so as to regulate the amount of water to be given to prevent dehydration.

Insist upon putting the infant to the breast the first three days after birth to give the baby the advantages of the colostrum, namely, in establishing normal digestion and weight development, whether or not the mother can nurse her child successfully. The problem often confronting us is, should we give a complementary feeding from the bottle immediately after birth to prevent unnecessary loss of weight and strength, so the baby will be able to exert more effort and empty the breast more thoroughly, or should we withhold complementary feeding, and allow the baby to get so hungry that it will empty the breast more thoroughly? Personally, I feel that a safe rule to follow is to give water only in sufficient quantity to prevent dehydration, namely, one ounce after each nursing. Permit the physiologic loss to take place up to the point that is 10 per cent of its birth weight at the fifth day. If the baby loses beyond this point, begin complementary feedings at once, at the same time exerting every possible effort to encourage the full function of the breast.

Dr. M. Pierce Rucker was kind enough to look over the records of 500 cases in the past year, and found, out of the 500, 289 gave sufficient breast milk, 120 were weaned and 91 had to have complementary feedings from the bottle during a period of thirty days from birth.

It might be of interest to recall to our minds the mortality rate of infants from all causes under one year of age in the State of Virginia:

1913	104.7	per	1,000	births
1923	82.6	per	1,000	births
1932	67.0	per	1,000	births

After all, with the simplified and successful bottle feeding in vogue at present, the highly efficient milk supply, based upon its excellent quality and low bacteria count, the tuberculin tested and disease-free cows, together with the wonderful improvement in the infant mortality rate, we are compelled to realize that no infant's life should be jeopardized by unnecessary delay in inaugurating bottle feeding. When all reasonable measures to establish and maintain sufficient breast milk are exhausted, and when, in spite of our efforts, more than a 10 per cent loss of the infant's birth weight on the fifth or sixth day is observed, I am convinced, from an anatomic, sociologic, economic and prognostic standpoint, bottle feeding, either in part or as a whole, is justifiable, and a simple, sane, safe, systematic and scientifically balanced bottle feeding should be inaugurated without hesitation.

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DISCUSSION

DR. THOMAS D. JONES, Richmond: I will certainly not be able to add anything of much value to Dr. Weitzel's paper. I should like, however, to attempt to emphasize some of the points that he brought out.

First of all, as to the advantages of breast feeding over artificial methods, Lucas states that, of all infants reaching the age of two weeks that are artificially fed, one out of every five dies before the end of the first year, and of those that are breast fed only one in thirty dies before the end of the first year.

Statistics reached by the study of Wertheimer and Wolff of large groups of infants as regards duration of infection were as follows: Duration in breast-fed babies was from one-half to one week; in the healthy bottle-fed baby it was two and a half weeks, and in the non-thriving bottle-fed baby three to four weeks. The mortality figures in this group of infections was

as follows: Breast-fed—none; normal bottle-fed—ten to twenty-eight per cent; premature and non-thriving—forty per cent.

Woodberry's study of 22,422 live born infants in eight American cities reveal that the mortality in the artificially fed babies for the first month of life was over three times as great as in the breast-fed baby; four times as great in the second month, and nearly three times as great in the third month.

A recent study made by Grulee of over twenty thousand babies observed in the welfare stations in the city of Chicago showed that forty-eight and five-tenths of this group were entirely breast-fed; forty-three per cent were partially breast-fed, and eight and five-tenths artificially fed. There were two hundred and eighteen (1 1/10%) deaths in this group. Six and seven-tenths per cent of deaths occurred in the breast-fed group; twenty-seven and seven-tenths in the partially breast-fed group, and sixty-two and one-tenth per cent occurred in the artificially fed group. Many more equally as striking figures could be quoted, but the advantage of breast feeding is well enough established without further comment on this point.

The most important question arising from this paper, is, what can be done to bring about an increase in the number of breast-fed babies? I doubt if most of us as physicians take this matter as seriously as we should. Dr. Weitzel has mentioned the most frequent causes for failure of breast-feeding, and as he has already indicated much can be done during the latter months of pregnancy in increasing the mother's ability to nurse her infant. A more wide-spread emphasis on the advantages of breast-feeding might prove helpful. A few years ago the State of Minnesota put on a breast-feeding campaign in a given area and reached practically every mother. The percentage of breast-feeding attained through this campaign was 96 per cent at the end of the second month; 72 per cent at the end of the ninth month. The high percentage of breast-feeding in Grulee's group was achieved through efforts of that sort.

Dr. Oliver Wendell Holmes stated that "A pair of substantial mammary glands has the advantage over two hemispheres of the most learned professor's brain in the art of compounding a nutritious fluid for infants." We are not at all sure that all the elements that go to make up a perfect food for infants have ever been discovered, and, until we can be sure of that, we should "make haste slowly" in depriving an infant of breast-milk—unless we are compelled to.

THE TREATMENT OF HABITUAL ABORTION.*

HOWARD F. KANE, A. B., M. D., F. A. C. S.,
Washington, D. C.

Rare, indeed, is the occurrence of spontaneous abortion when a healthy ovum is properly attached to a normal endometrium. Trauma should never be accepted as the cause of abortion until fetal, uterine and endocrine pathology have been proved to be absent.

As the most common fetal cause of habitual abortion is syphilis, examination of the patient and her husband for the presence of this disease should be the first step in the study of the case.

When several abortions have occurred, chronic hypertrophic endometritis is frequently found to be present. A diagnostic curettage in this type of case is often partly curative. Operation alone, however, is not sufficient treatment. The engorgement of the endometrium may be the result of endocrine disturbance and is probably only one factor in the causation of the premature expulsion of the ovum.

When no fetal or local maternal abnormality is present, it is almost certain that endocrine function is at fault.

For pregnancy to take place, the anterior lobe of the pituitary gland must secrete sufficient prolan A to stimulate the growth, development and maturation of the primordial follicles in the ovary. These follicles must produce oestrin in quantity sufficient to cause vascularization and hypertrophy of the endometrium. At this stage of the endocrine cycle, a fertilized ovum may find its way into the uterine cavity, but unless other hormones have prepared the endometrium for its reception, development will not take place. Prolan B must have changed the theca cells of the Graafian follicle into a corpus luteum and this body must have produced progestin.

An important function of progestin is the sensitization of the endometrium which changes it to decidua and provides a satisfactory medium for nidation of the ovum. Progestin also antagonizes the action of oestrin on the uterine muscles and

*Presented as part of a post-graduate course in Female Endocrinology at the George Washington University School of Medicine during May, 1934.

prevents the contractions, which, if present, would expel the ovum. That progestion is essential to the maintenance of pregnancy is proved by the fact that removal of the corpus luteum during the first half of pregnancy is almost certainly followed by abortion.

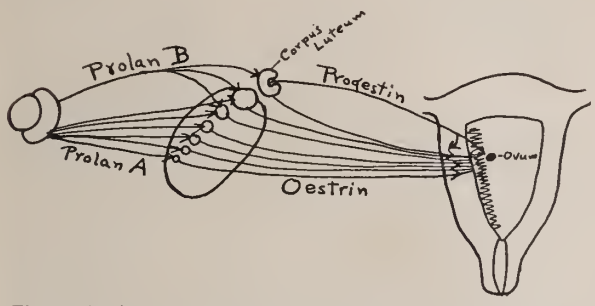

Fig. 1.—Prolan A goes to the primordial follicles and stimulates development. Meanwhile the follicles are sending oestrin to the endometrium, causing hypertrophy. Prolan B stops follicular development at the Graafian follicle stage and luteinizes the theca cells. Progestin from corpus luteum maintains endometrial hypertrophy, prevents uterine contractions, and, by sensitizing the endometrium, prepares it for nidation of the ovum.

The obvious course in the treatment of habitual abortion is to supply progestin. As this hormone has not yet been isolated for clinical use it is necessary to supply it by means not wholly ideal. In accordance with the theories of treating conditions in which a hormone is lacking, the proper procedure would be to stimulate the luteinization of the Graafian follicle by means of the anterior pituitary sex hormone. Prolan, however, while it stimulates the formation of the corpus luteum, at the same time causes an increased production of oestrin. It is the action of oestrin which must be antagonized, and while successful results have followed prolan therapy, clinical observations have shown that in many cases the oestrin evidently overwhelmed the progestin.

The most commonly available source of progestin is corpus luteum extract. While this substance contains some oestrin, the progestin dominates. The administration of corpus luteum is, of course, only substitutive treatment, but as it is necessary for only three or four months, substitution seems justified.

A satisfactory method of treatment, practically that suggested by Mazer and Goldstein, is carried out as follows:

Two ampules of corpus luteum extract are given subcutaneously every other day for ten doses. This procedure is repeated at three week intervals until the end of the fifth month. In addition, the patient takes one-half grain of desiccated thyroid three times daily for two weeks, and four grains of sodium iodide three times daily for the following two weeks; then, resuming the thyroid, a change is made to sodium iodide every two weeks. The patient's activities are not curtailed except in regard to intercourse, which is forbidden.

Of twenty-six women who have received this treatment, twenty-two have been delivered of living children or are now pregnant beyond viability. In one case premature separation of the placenta occurred at the end of the seventh month, and three patients aborted at about the third month. In one of the latter cases the fetus was probably dead before treatment was instituted.

As each of these patients had previously aborted from one to six times it would seem that in some instances, at least, the successful termination of pregnancy must be credited to the method of treatment.

NOTE:—Since this paper was offered for publication, progestin has become available under the name of Proluton.—H. E. K.

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1835 Eye St., N. W.

ANEMIAS DEPENDENT UPON FOOD DEFICIENCIES.*

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The concept of anemias conditioned by food deficiencies is of very recent origin. It has been customary in the past to consider very few diseases as deficiencies, only those associated with a specific vitamin lack. These are xerophthalmia, rickets, beri-beri, scurvy and pellagra. The recognition of even these is comparatively recent, for the earlier concept of disease was that a toxic or malign in-

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fluence was at work. By deficiency diseases, we mean those caused by the absence or lack of a factor necessary for the body economy.

The past five years have seen several new diseases added to the list of those dependent upon a food deficiency, with the prospect that others may fall into this category. Of these, I shall consider only the anemias.

PERNICIOUS ANEMIA

It was Castle[1] who first showed that pernicious anemia was dependent upon a dietary deficiency. This deficiency resulted from an inability of the patient to digest suitable foods, rather than a lack of these foods. This was shown by a very simple experiment. Beef-steak was fed to a pernicious anemia patient without improvement in the blood picture or general condition. Then, to this same patient was fed beef-steak which had been digested in the stomach of a normal individual, with an improvement comparable to that obtained with liver feeding. This indicated that some process of digestion took place in the normal stomach which did not in the stomach of a pernicious anemia. From these results, there was postulated the existence of an extrinsic factor found in the food, and an intrinsic factor found in the stomach of normal individuals, the interaction of these two being necessary for the prevention of pernicious anemia. The extrinsic factor has been identified as closely related to Vitamin G,[2] being found in beef-steak, eggs, yeast, rice polishings, etc. The intrinsic factor is recognized only by the things which it is not, that is, it is not HCl, pepsin, rennin or lipase.[3-4] The substances commonly used for the treatment of pernicious anemia, liver and dried stomach, contain the product of interaction of the extrinsic and intrinsic factors.

According to this concept, it should be possible to produce an anemia identical with pernicious anemia by exclusion of the extrinsic factor from the diet. This has been shown to be possible in certain cases of sprue[6] and macrocytic anemias of pregnancy.[5]

Moreover, anemia indistinguishable from pernicious anemia has been produced in people receiving an adequate diet and having a normal gastric secretion, but who have some disorder preventing absorption from the intestine, e. g., stricture of the intestine[7] or a prolonged diarrhea.[8]

Thus we can have an anemia indistinguishable from pernicious anemia dependent upon any one of three deficiency mechanisms:

1. Absence of the intrinsic factor from the gastric juice.
2. Absence from the diet of the extrinsic factor (vitamin G).
3. Failure of the intestine to absorb the product of interaction of the extrinsic and intrinsic factors.

SPRUE

Sprue is a macrocytic anemia very similar to pernicious anemia, both in its symptomatology and blood picture. Outstanding features of the disease are the prolonged diarrhea and sore tongue. It is very prevalent in the West Indies, notably Porto Rico, but is met with quite frequently in the southern states. Formerly considered to be caused by the Monilia psilosis, it has recently been shown to be due to a lack of the water-soluble vitamin B_2, the extrinsic factor in Castle's concept of pernicious anemia.[6] In some cases there has been a lack of this in the food, in others an inability to absorb this because of the profuse diarrhea, and in a few, an apparent absence of the intrinsic factor from the stomach so that it could not be utilized. Thus the same factors of a conditioned deficiency exist in this disease as in pernicious anemia. The most satisfactory method of treating any case of sprue is by intramuscular or intravenous injections of liver extract, though most cases will respond to liver extract or vitamin B_2 extract by mouth.[9]

IDIOPATHIC HYPOCHROMIC ANEMIA

Among the anemias which are usually classified as secondary is one which has recently been distinguished as idiopathic hypochromic anemia. This was first recognized as a distinct entity by Faber in 1913.[10] It has, since then, been called by several names, such as simple achlorhydria anemia, chronic chlorosis, etc., but it is now generally known as idiopathic hypochromic anemia.[11]

This is not an uncommon disease. It occurs most frequently in women between the ages of 30-50 years. The onset of the disease is insidious, so that frequently these patients do not consult a physician until the anemia is of a severe grade. Fluctuations in the degree of anemia are common, but the blood seldom returns spontaneously to normal. Symptoms of the disease are not pathognomonic. They may include loss of weight, weakness, vertigo, abdominal distress with flatulence, lack of appetite, etc.,

and menorrhagia is common. Atrophy of the mucosa of the tongue, giving a smooth appearance, usually occurs. The spleen is commonly enlarged. Brittle finger nails with a concave depression is a frequent sign of this disease. The blood shows a marked lowering of hemoglobin, a moderate lowering of the red cells, giving a color index of .6 or less. Leukocytes and platelets are usually slightly reduced. Free hydrochloric acid is absent or markedly diminished in the stomach contents.

The symptoms and signs just cited, together with the usual history of a grossly inadequate diet, and the prompt remission of the clinical symptoms and anemia when a good diet and large doses of iron are supplied, demonstrate that this disease is due to a chronic nutritional deficiency.

The dietary deficiency may have started because of indigestion, more and more foods being eliminated until an entirely inadequate diet resulted. These patients usually have taken for years a diet rich in carbohydrate foods, low in proteins, fresh vegetables and fruits. In addition to the inadequate food intake, there exists an altered gastro-intestinal function, evidenced in part by the absence of free hydrochloric acid from the stomach.

I mentioned earlier that menorrhagia was a frequent accompaniment of this disease. Such cases were formerly considered to be anemic because of the abnormal menstrual bleeding, but no local cause for this bleeding could be found, and the anemia improved very little after curettage of the uterus. On the other hand, large doses of iron with *no* local treatment to the uterus usually results in cure of the anemia as well as cessation of the menorrhagia.

It must be emphasized that large doses of iron are essential for the successful treatment of this disease. Six (6) grams (90 grains) of iron and ammonium citrate daily has been found to be the optimal dosage. Such medication, coupled with a diet rich in meats, fruits and fresh vegetables, produces a striking improvement in the clinical symptoms and anemia in two to three months. The disease is certain to recur unless iron treatment is continued indefinitely, for there seems to be a specific inability to metabolize the small amount of iron which is present in foods.

Anemias of Pregnancy

The occurrence of moderate anemia during pregnancy has for a long time been considered a normal physiologic process, it being assumed that a portion of the mother's blood was utilized in supplying nourishment for the child. Severe grades of anemia during pregnancy were thought to be due to a toxic or hemolytic substance formed by the fetus which either inhibited bone marrow activity or destroyed the mother's corpuscles.

It has been shown[12] that such an anemia seldom develops except in the presence of an inadequate diet, and that it can be cured either during or after pregnancy by supplying a good diet and large doses of iron. It has been shown, further, that the anemia does not improve greatly after pregnancy if the patient be kept on her inadequate diet. Of course, the food deficiency of the mother is greatly aggravated by the demands of the fetus.

Anemia of Infancy From Maternal Iron Deficiency

Now the last of the anemias I shall take up is that occurring in the infant about one (1) year after birth.[13] No matter how inadequate the mother's diet be during pregnancy, or how anemic she becomes, the child is usually born with a high hemoglobin and red count. At the end of the first year this has dropped to a normal level. In infants born from mothers who suffered from anemia during pregnancy, the blood falls a great deal more than normal, often reaching a very low level. Now, this anemia can be prevented by giving the mother iron during her pregnancy, or cured by giving the child adequate doses of iron. Apparently it is due to a lack of storage of iron in the infant because of an iron deficiency in the mother.

Conclusions

We have considered certain types of anemia which are dependent upon a deficiency of food elements. This deficiency may exist because of:

1. An inadequate diet.
2. Gastro-intestinal secretory defects.
3. An inability of the intestine to absorb the essential food elements.

A consideration of these factors will often clarify the etiology of anemias of obscure origin.

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DISCUSSION

DR. WILLIAM H. HIGGINS, Richmond: There is probably no disease occurring with such frequency in all the medical specialties as anemia. For that reason Dr. Baker's admirable paper should appeal to each of us, regardless of our professional leanings. The term "food deficiency" as a cause of anemia seems to me, however, to be somewhat misleading. Although food, as we generally use the term, might be looked upon as the common carrier of the so-called extrinsic factor, the minerals and vitamins that enter into the prevention of anemia, we can hardly say that food, *per se,* is the cause of anemia. I think it was Ashton, several years ago, who established that during starvation the blood is very little changed during the process of degeneration of the body tissues. In the primary anemias, as Dr. Baker has indicated, we do have a lack of the so-called extrinsic factor, which in itself is one of the links in the production of this disease; we have a lack of some of the minerals, such as iron, in the food of others, which actually does enter into the cause of the secondary anemias; yet our diets, as a whole, for normal individuals, have a remarkably high content of iron. Infants, of course, fed on milk alone for a long period of time will develop anemia. I think it has been shown that rats kept on milk alone and suckling pigs kept on milk alone will develop anemia on account of lack of iron content in the milk. The amount of iron necessary for the general upkeep of the body, so far as the average food is concerned, is remarkably low. It has been shown that our American diet averages about fifteen milligrams of iron a day, yet there are instances in which diets running much lower than that have kept the individuals on very satisfactory levels so far as anemia is concerned.

A few years ago Davidson, in Edinborough, had a very interesting study of anemia. He selected two groups of people. First, he had a group of 750 children, below the age of twelve, and male adults. He made a study of their blood and at the same time made a study of the content of iron in their diets. In no instance did they have up to the amount of iron that we regard as requisite for each individual. In some instances it was less than six milligrams a day. Yet in this group of young children and male adults anemia was the exception. Then he took another group, of females ranging in age from fifty to fifty-three and he found anemia in fifty per cent of those people, coming out of the same families as the children and male adults. In one instance anemia was extremely frequent, and in the other it was of rare occurrence. His explanation is that in the female group there were what he called certain provocative factors, such as pregnancy, menstruation, lactation, the demands of the fetus, and other incidents peculiar to the female organism, that entered into the production of those anemias. So we can hardly say that the average diet, by itself, is sufficient to bring on any of these anemias unless we have that added factor which breaks down the body resistance.

Dr. Baker spoke of a type of secondary anemia which

we see in women of middle life, idiopathic hypochromic anemia. It is very remarkable in those cases that there is a persistency of the anemia even on an adequate iron diet—that is, a diet with the American ration of iron in it. They will develop anemia in spite of the mineral content. It seems there is a lack of absorption of iron from the intestinal tract in those instances, because the small amount of iron that is in the diet does not get into the blood stream. It is also apparent that where there is a lack of acid in the stomach the anemia will come on earlier and is all the more resistant to treatment. I think it has been shown that the absorption of iron from the intestinal tract, in cases where there is absence of acid in the stomach, is very much slower, and hence it is necessary to use much larger doses. Cases have been cited in which it was necessary to use five times as much iron, in order to supply an adequate amount in those cases of achylia. It has been shown, I believe, that if the iron is given in small repeated doses there is better absorption. If the iron is given immediately after a meal, when the acid content of the stomach is supposed to be at the highest point, there is reason to believe the anemia will be more rapidly overcome than if it were given some time after the meal, when the acid in the stomach is at a lower ebb.

I think Dr. Baker has brought out an important point in the handling of those anemias. Of course, those women that lack acid will seemingly have to take iron all their lives, just as those who have pernicious anemia have to take liver extract. Unless a large amount of iron is given them throughout their lives, there is a tendency for relapse, just as there is relapse in pernicious anemia when the liver extract is stopped.

Dr. Baker's paper has been a valuable contribution to the program.

DR. J. S. DEJARNETTE, Staunton: How do you give it?

DR. HIGGINS: I think, Dr. deJarnette, the iron and ammonium citrate is probably the best way. You can get granular iron and ammonium citrate and give it in powdered form or in solution. Give it about four times a day. Some cases have been reported to have been given as high as three hundred grains a day of iron without any ill effect. The old Blaud's pills are not used much now, because of the small amount of iron in them.

DR. R. H. MANSON, McKenney: I should like to ask the doctor what experience he has had in using sodium cacodylate.

DR. HIGGINS: As to the question asked about the sodium cacodylate, I think the most recent evidence is that sodium cacodylate is not a particularly efficacious drug. Even copper is not looked upon now as being as good as it was a short time ago. In this same study of Davidson's that I mentioned, they have kept the patients on a low copper content, giving them iron and eliminating all the copper possible from their diet, and those patients improved in the same way as the others. Sodium cacodylate, I think, has very little effect on the production of red blood cells.

DR. J. SHELTON HORSLEY, Richmond: It may not be particularly appropriate, because the title is " "Anemias Dependent Upon Food Deficiencies," but I wish to call attention to the anemia that simulates very closely pernicious anemia, and that comes from a slowly bleeding polyp or ulcer in the stomach or duodenum or from cancer in the right colon. It was thought at one time that some specific hemolytic toxin was elaborated by cancer in the right colon, but the anemia can be accounted for by the slow bleeding and the rapid absorption of toxic products in the right colon. I recall a recent patient, seventy-two years of age, who came into the hospital with a tentative diagnosis of pernicious anemia, in whom we found cancer in the right colon. If cases of anemia do not respond very quickly to medical measures, such as suggested by Dr. Baker and Dr. Higgins, it would be well to look for a lesion in the stomach, duodenum, or the right colon.

DR. GREER BAUGHMAN, Richmond: Just a word about the anemias of pregnancy. I am so glad Dr. Baker mentioned those. Every pregnant woman that comes into my office has her finger stuck and her hemoglobin estimated. If her hemoglobin is low, she gets a change in her diet—some form of iron or something that will make the iron get into the hemoglobin.

I think the question of making the iron stick (get into the hemoglobin), is very important. If some of these internists will tell us how to make the iron stick until it has time to get into the blood stream I shall be very grateful. If Dr. Baker will elaborate what Dr. Higgins said about that I shall be glad.

DR. BAKER, closing the discussion: I think there is very little to add. Iron and vitamins are ordinarily not considered as foods, but they are essential food elements and should be so considered. They are as much part of our food elements as meat, carbohydrate, or whatever else we may eat.

Dr. Higgins brought out, too, the fact that our foods ordinarily contain enough iron. But in these people who have hypochromic anemia, their diet has been deficient for a long number of years; for probably twenty or thirty years they have been living on a diet that is high in carbohydrates and low in meats, fresh vegetables and fruits. In addition to that, there seems to be a lowered ability to metabolize iron.

As Dr. Horsley brought out, there have been reported numerous cases of an anemia which could not be distinguished from pernicious anemia, resulting from prolonged diarrhea, cancer of the stomach, or some other gastro-intestinal disorder. In these cases there is undoubtedly an inability to absorb the essential anti-anemic factor. The anemia in such cases responds well to parenteral injections of liver extract.

Answering Dr. Baughman's question, I do not know how you can keep iron down in these people if they are vomiting, until the vomiting is controlled. Parenteral

administration of iron is effective, but often dangerous. It is essential that much larger doses of iron be given than was formerly the custom. Sixty to ninety grains of iron and ammonium citrate daily, in three or four divided doses is probably the most satisfactory method. It is especially important to keep pregnant women from becoming anemic because babies born of anemic mothers will develop severe anemia in early life.

A NEW FRENCH CARDIOLOGICAL UNIT.

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From the practical viewpoint, even such a medical specialty as cardiology may need sub-division into several departments. For example, its didactic aspects are often quite different from those of research and require a different type of mind for their representation. Again, cardiac therapeutics, while becoming ever surer and more precisely defined, constitute another distinct division of the subject. Histology, physical diagnosis, embryology, comparative cardiac anatomy and physiology, both normal and pathological,—all these must be combined for full understanding of the heart and its mechanisms; and so many cardiological problems are still unsolved that they can be attacked only when special apparatus, technique and technicians can be applied to one doubtful point after another.

This preamble is so self-evident that it may be taken as almost a platitude. However, applications of these ideas are not unimportant. Modern hospitals and medical schools of our larger cities generally find that modern cardiology demands special laboratory facilities, preferably combined in a single unit, which it is often desirable to place in very close relation with clinical material. Results are frequently good, however, when heart cases are not segregated from other clinical conditions, though such segregation is specially useful in pediatric cardiology. There are many difficulties in associating technical study with the human relations present in actual cases of disease. Perhaps no single plan can obviate every obstacle. Some of the difficulties are related to local ideas, prejudices, customs and resources. They must therefore differ considerably even in different places in any one country, not to mention divergences occurring in different countries.

In France, the creation of a new cardiological centre has been rendered possible by conditions inherent in the hospital and teaching administrations not only of France, but, more narrowly and definitely, of Paris. For it is naturally in Paris that students, clinical material, hospital facilities and agencies for instruction are more abundant than elsewhere in France. Again, French governmental centralization renders medical administration broadly identical in Paris with that applied everywhere else in the French Republic, including the French Colonies.

In passing, it may be explained that the new cardiological centre at Versailles was created through two main influences:

First, the service organized by Vaquez at the Hôpital Saint Antoine, where were collected the records derived from his prolonged labours, became disintegrated by his assignment to another hospital (La Pitié). The service organized by Vaquez was not officially recognized as such, nor was it maintained, by the governing body known as the Assistance Publique, or public charities. This body has no special interest in the results accumulated by any physician during his connection with any hospital or hospitals to which he may be assigned. The transfer of Vaquez from the original site of his work to another hospital resulted in the association of two cardiologists at the Pitié, neglect to provide any cardiologist for the Saint Antoine hospital and the appointment of *three* gastro-enterologists to the latter. Again, Vaquez was about to retire from active work, having nearly reached the age-limit prescribed by law. Patients who had formed the habit of resorting to the Vaquez clinic for the special attention which he benevolently bestowed found this valued aid no longer at their disposal and were obliged to begin over again with persons and methods not familiar to them.

Second, Doctor Lutembacher, a student and follower of Vaquez, was well placed to organize and operate a new centre. The latter could thus largely profit by the ideas and life-work of Vaquez, constitute a special field for the labours of Lutembacher and provide a capable unit for the public. A condition stressing the necessity for a cardiological centre consists in the high mortality and increasing frequency of cardiac disease. In France, cardiac morbidity is but little below that of cancer. The deaths due to heart disease in France numbered 49,889 in 1906, and 62,014 in 1930 (Lutembacher's figures, *Le Siècle Médical,* December 15, 1933).

As with other affections, prevention is better than cure in cardiac disease. Cardiac prophylaxis refers especially to syphilis and rheumatism. While antiluetic campaigns and material means for combating syphilis have been freely provided in a broad and general way, they have not dealt distinctly with the cardiac relations of syphilis, while, at least in France, little attention has been paid hitherto to the prevention and arrest of the effects of rheumatic fever upon the heart. An effective cardiologic centre must have several departments:

1. *For Collection and Preservation of Records.*—The data are anatomical and pathological (lesions of the heart and vessels), histological, embryological, radiological, graphic (arterial, venous, capillary and cardiac tracings), kinematographic and photographic. They also include phonographic records of normal and pathological heart sounds.

2. *For Research.*—This field is unlimited. In it lie studies on muscle, blood-flow, pharmacological action, physical, chemical and bio-chemical reactions, and the physiology of the heart and circulation in man and various other animal genera and species. Research must also deal with the cardiac relations of the nervous system and with vegetable as well as animal biology (reactions in plant cells and tissues, such as those mentioned in the investigations by James Mackenzie on the hairs of Drosera).

3. *Clinical Applications.*—Here are included exact diagnosis, treatment and the effects of therapeutic agents in clinical cases. Here also must be classed bacteriological and serological tests, with reference to the effects of various infections upon the heart (syphilis, pyogenic bacteria, the agents producing "rheumatism" and the various forms of arthritis, and other bacteria whose causative relations to endocarditis, pericarditis and the vascular system are assuming increasing importance. Clinically, the action of chemical and bacterial toxins upon the myocardium and other tissues of the heart and vessels has become of great practical interest.

The functions of these three sections of the modern cardiologic centre more or less over-lap. However, the combination of the three sections in a single unit permits correlation of all facts observed, and thus permits increasingly correct interpretations.

For the formation of the French unit combining these several departments and constituting Lutembacher's workshop, a pavilion among new constructions of the local civil hospital has been set aside for this special purpose at Versailles. This pavilion, named after Potain, includes three stories and a basement. The department (generally corresponding to the American county) of Seine-et-Oise, in which Versailles is situated, combines with the central French government in providing funds for its equipment and maintenance. The centre consists of the three sections whose functions have been described above. It contains a large collection of anatomical and pathological material, slides, tracings, electrocardiograms, films and similar adjuvants. Apparatus is modern and complete. The laboratories are assembled on the ground floor and many of them can be thrown together by means of sliding partitions which normally separate them. Detailed description of the equipment appears in *La Presse Médicale,* April 4, 1934. The two upper stories of the Potain pavilion are reserved for patients. There are no general wards, but a number of large rooms contain each three or four beds, while a few rooms accommodate but a single bed. Frogs, larvae and other living experimental material are housed in the basement.

The centre is thus largely devoted to research. A thorough study of the heart in all its relations is made here. Instruction, whether under-graduate or post-graduate, forms no part of the work of this centre, though its publications are available to teachers and students. So much labour is required for technical study and research that this centre cannot undertake the training of students, advanced or otherwise. Again, it is too far from Paris to be easily accessible for the Medical School and has been deliberately planned for the single-minded purposes which have just been outlined. Its contribu-

tions to therapeutics promise to prove of great value. This is the first hospital unit organized for the grouping and systematic treatment of cardiac cases. An experience of thirteen years has proved to the satisfaction of Lutembacher and his associates that intravenous injections of sodium salicylate are harmless and effective in the treatment of acute rheumatism. He has himself given more than 5,000 such injections, with no accidents and excellent results. With operators of sufficient skill, a patient may receive from 200 to 300 intravenous injections of salicylate without production of venous sclerosis.

About one kilogram, or over two pounds, of salicylate is injected intravenously per month at this new centre. The solution employed is a 1 to 20 one, containing the salicylates of sodium, potassium and calcium in the proportions in which these metallic ions occur respectively in Ringer's solution. Solutions of 1 to 10 are not employed. Injections are given well between meals. The necessary needles are very fine, and great care must always be observed not to permit the injected solution to escape outside the vein. This treatment is inapplicable in the presence of cardiac thrombosis, on account of its possibility of precipitating embolism.

The intravenous salicylic treatment thus described should be applied as early as possible, even in the mildest forms of acute rheumatic fever. It is claimed to be the best method for securing complete cure of the rheumatic disease and for preventing injury to the heart. Hospitalization is necessary for cases requiring two injections per day. If a single daily injection suffice, the patient can come as an out-patient every morning for his treatment.

Paris, 10 bis rue Herran.

MEDICAL AND SURGICAL DIATHERMY.*

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(Thomas A. Edison--the wizard; electricity—dachshund).

Differentiate:

MEDICAL DIATHERMY, a "heating through," is the application of high frequency electric heat to any part of the body, under controlled conditions, by means of two metal electrodes, placed opposite each other, on the areas to be treated, without electric shock or danger of death to the organism.

SURGICAL DIATHERMY is the application of high frequency electric currents for the destruction and removal of diseased tissue or for cutting through normal tissues with diminished bleeding.

The development of diathermy is the outcome of the gratuitous cooperative labors of a group of physicists, chemists, and medical and surgical investigators, to all of whom grateful acknowledgments are due.

HISTORY OF ELECTRICITY AS A THERAPEUTIC AGENT

Advances made were often simultaneous and independent in widely-separated areas, making it, therefore, difficult at times to assign priority in the construction of apparatuses and improvements in technic.

The history of this new art is not merely a chronological recitation of the various events and discoveries from a century and more ago: the citations are given to instruct the student in the development from the earliest simple efforts, step by step down to our present-day attainments. The result of such a procedure is to bring about a far better comprehension of a somewhat difficult matter, a real grasp of the subject. The recognition of the claims of the pioneers in the field of electrotherapeutics is also payment of a just debt to their honored memories, while the very act makes for a culture not attainable by him who neglects it.

It is interesting to note that William Gilbert (1540-1603), physician to Queen Elizabeth, made memorable experiments in magnetism and electricity, from which he derived the term *electricity*—taken from the Greek, electron, meaning amber. It is upon him that Krusen bestows the title "father of electrotherapy." To the honored name of Gilbert we acknowledge the first published work in 1600 on magnetism—De Magnete—the first scientific treatise based on the experimental method to be printed in England. Coincident with the publication of this great work, Gilbert was honored with

*Read before the Southwestern Virginia Medical Society, at Radford, Va., September 21, 1934.

the presidency of the Royal College of Physicians.

At the very outset of his studies, Gilbert found Jerome Cardan (1501-1576) boldly asserting that a wound made by a magnetized needle is painless, when, as Gilbert so clearly states, Cardan had only to prick his finger in order to ascertain the truth or falsity of the observation.

Gilbert's De Magnete (1600) and William Harvey's De Moto Cordis (1628), in the light of later comparative studies, established a new high-water mark in the development of science and the methods of investigation. On account of the lack of scientific intelligence on the part of the English-speaking public at the time Gilbert published his De Magnete, there was a peremptory lull in the progress of electrotherapy in England. Walter Charleton (1619-1707), who was probably fairly representative of the scientific intelligence of the period, did much to dampen the ardor in the field of electro-scientific research, due perhaps more to his lack of understanding or appreciation of Gilbert's observations, than to any contributions he produced himself, either in thought or action, to help the cause along.

Gilbert's publications had been more favorably received in Italy, and students were flocking from all over the world, seeking admission to such universities as Padua, Bologna, Pisa, Pavia, etc., where medicine, mathematics and the physical sciences were receiving the greatest emphasis. At the time of the publication of Gilbert's De Magnete, the immortal William Harvey (1578-1657) was a student at Padua, which circumstance did much to link two great nations together in the field of scientific research (Great Britain and Italy). It was about the year 1592 that Galileo had been called from Pisa to Padua, where he became known as the most brilliant and stimulating teacher of natural philosophy of the day. He taught the methods of experiments and inculcated in his students habits of independent thinking.

Copies of Gilbert's De Magnete reached Padua in the midst of Harvey's student career, and it must have been with glowing enthusiasm that faculty and students alike read in Gilbert's "Preface to the Candid Reader," "* * * in the discovery of the secret things, in the investigation of the hidden causes, stronger reasons are obtained from sure experiments and demonstrated arguments than from probable conjectures and opinions of philosophical speculators of the common sort."

Sir Thomas Browne (1605-1682), the literary physician of Norwich (born three years after Harvey had won his degree from Padua, and two years after the death of Gilbert), was the first to use the noun "electricity." In his Pseudodoxia Epidemica, he says:

> "Again, the concretion of ice will not endure a dry attrition without liquation; for if it be rubbed long with a cloth it melteth, but Crystal will calify unto electricity. * * * but if gently warmed at the fire and wiped with a dry cloth, they will better discover their Electricities."

Sir Thomas Browne was the first to use the plural of electricity.

> "The science of electricity, as must be generally known, originated after the establishment of The Royal Society; almost every early electrical discovery of importance was made by its members, and is to be found recorded in the PHILOSOPHICAL TRANSACTIONS of the Society."

We owe a great deal of honor and praise to the Royal Society—which was the Oxford and Cambridge groups working jointly for the promotion of "Physico-Mathematical Experimental Learning." First record of their minutes is dated November 28, 1660. The Royal Society was composed of such personages as Dr. John Wallis, Mr. Theodore Haak, Dr. Jonathan Goddard, Dr. Seth Ward, Dr. Ralph Bathurst, Dr. William Petty, Sir Christopher Wren, and the like. In 1663, a year after the incorporation of the Royal Society, the study of electrical science received great impetus through the invention of a friction machine for the production of static electricity. This was the work of Otto von Guericke (1602-1686). The first practical static machine that could be used or operated with ease was that devised by Francis Hauksbee, who, in 1706, employed a glass ball that could be rapidly revolved by means of a crank. Friction was applied by hand, and a collector was provided by means of a brass chain. Improvements were later made, and Jessee Ramsden (1735-1800), an English optician and manufacturer of mechanical instruments, in 1768, devised the glass plates used today.

Subsequent to the death of Hauksbee, fundamental discoveries in the science of electricity lagged until 1729, when Stephen Gray (1696-1736) clearly differentiated between conductors and non-conductors. He showed that a static charge could be conveyed to another body or substance, giving to that body or substance the same properties of attracting

or repelling, and that these properties could be carried to other bodies many hundred feet away over metallic wires and wet strings.

The development of the Leyden jar, an apparatus for the accumulation of static charges, played an important role in the application of electricity to disease. Until the invention of this form of condenser, static charges from the then-developed machines were relatively mild, and the physiological effects scarcely observable. This brings us up to 1743, near the middle of the 18th century, and students were propounding questions: "What possible use can electricity have?" Kruger delivered an address in response to these questions to his students, in which he said (with doubtful logic) that if electricity must have some practical use, it was certain that none had been found in theology or jurisprudence, and, therefore, where else could it be used except in medicine. He urged his students to investigate. He told them he had heard that electrified bodies did not readily decay, but said that experiments must determine whether electricity would prevent decay and wasting in the human frame. He demonstrated that powerful electrical charges caused blisters on the skin. He reasoned, therefore, that these charges traveled through the entire body and caused changes in remote parts. He stated that it was possible that electrification of the body would increase the circulation of the blood and that, while practically nothing was known about what electricity did, it seemed to him certain that body changes would occur.

To detail the many events, discoveries and experiments that followed through many years of electrotherapeutics, might render this treatise unworthy of consideration, so, in order to cover the ground, and as briefly as possible, I shall attempt from this point merely to refer to what took place in electrotherapy from the middle of the 18th century, down to the past few years, other than to say that Christain Gottleib Kratzenstein, in 1744, was the first man to apply electricity to the human body, and test its physiologic effects. He made the observation that the pulse increased several beats a minute following the application of the static spark, and Joseph Priestly reports in his "History and Present State of Electricity" that in fifteen minutes Kratzenstein cured a woman of contracted little finger; and that by one electrification he had so far relieved a person who had two lame fingers and that the patient could now play the harpsicord.

Alfred Charles Garrett (1813-1891), of Boston, was the first American to publish a comprehensive treatise on the use of electricity in the treatment of disease.

The middle of the 18th century marked the beginning of a general interest in the therapeutic use of electricity, Benjamin Franklin playing an important role in the promotion of electro-therapy by his valuable discoveries and unusual understanding of electric forces, electric apparatuses, etc. So important was Franklin and so valuable his discoveries, he was referred to as "Doctor" Franklin. Articles written about him often referred to him as: Benjamin Franklin, "M. D." He was often called upon to administer electric treatments for the relief of disease in Philadelphia and New York. Franklin had a wide acquaintance among physicians and acquired a knowledge of medicine of his day superior to that of the average practitioner.

In this discussion, I have attempted to show that electrotherapy has had a contemptuous as well as a tempestuous struggle to meet and overcome the criticisms of unbelievers; some of the criticisms have been more or less cantankerous. Some of the worst criticisms, which is an aphorism, come from those individuals that know little or nothing about electrotherapy, and have attempted by their unbelief to discredit the wise experimenters and discoverers. In the writer's own experience, unfavorable criticisms, coming from those probably less in position to discuss electrotherapy than the writer, have done much to thwart his success in this vicinity.

Today, electrotherapy has fully found itself in the works of the moderns, such as Oudin, d'Arsonval, Telsa, Galvani, etc., many of the high frequency currents taking the name of the experimenters and discoverers of different currents. The person now that shows an aversion or a lack of appreciation of electricity in medicine is looked upon by those having had experience as a non-progressive or out-of-date individual.

Finley R. Cook, of New York, while using a static machine for medical treatments, accidentally short-circuited the current to his finger with distinct destruction of tissue. From this small event, he got the idea of a new therapeutic agent, and began to treat small skin tumors, warts, moles, scars, facial blemishes, acne pustules, boils, infected tonsils,

hemorrhoids, etc., with marked success. Unaware of the European work, he reported his results in the *Medical Journal and Record* in 1906 and 1907.

Kinds of high frequency currents now in use for therapeutic purposes are:

1. Electrodesiccation — dehydration or drying current.
2. Electrocoagulation current—a cooking or heating without carbonization or charring of tissues.
3. Acusection—a cutting current with diminished bleeding.
4. Galvanic current—a chemical current in its effect, with positive and negative poles.
5. Sinusoidal currents—exercising or stimulating currents.
6. Faradic current—shocking current, practically replaced or abandoned for some of the foregoing currents on account of its shocking effect.

These currents are possibly the result of long, drawnout study and experimentation by the whole field of physicists, chemists and medical profession. It is absurd to state that electricity is a "cure-all," and no one holds to any such claim who is well-informed in the use of electricity as a therapeutic agent.

Eberhardt states in his Manual of Electrotherapeutics that electricity is not a "cure-all," but further states that we can do some things better with electricity than by any other means; in still other conditions, electricity does as much good as any other method of treatment; in still other conditions, electricity has little or no effect whatever. For example, stone in the urinary bladder and syphilis are two conditions not claimed to be affected by electricity, yet electricity in no way interferes with the prescribed treatment when other methods of treatment are employed, but does, in fact, enhance the effect of certain medicinal remedies that are employed along with and in conjunction with electricity, by hastening their assimilation and disassimilation through and out of the body or system respectively. Eberhardt had no intention, as one can well surmise from a study of the foregoing statement, of deviating from the truth.

Hypertension, particularly of the functional type, may be relieved by auto-condensation—another use of electricity as a therapeutic agent—perhaps temporarily, yes; even so, can we say that any of our medicinals or other means of blood pressure reduction shall be permanent in their effect! Just another objection coming from skeptics, in order to be counted among the critical, conservative group of therapists caveling about that which they know very little. A combination of diet, medicinals and auto-condensation is our sheet-anchor in lowering hypertension of the functional type.

In rheumatic affections, painful or injured joints, electricity does much, when properly applied, to dispel the pain and suffering and restore the parts to normal function. In some instances in the writer's own personal experience, gratifying results have been had with conditions of this character. The very fact that patients come back for more is some proof of its efficacy. In routing the pains and suffering of pelvic inflammatory diseases, particularly in women, more especially in puerperal sepsis, diathermy and other methods of heat application and stimulation by ionization, do much towards the relief and even cure of a great number of these infections, thereby avoiding operations in some instances.

Gonorrhoea can be treated, and the writer has cured this disease, with the abandonment of practically all other treatment, in the only patient he has treated for gonorrhoea in the female by this newer method, but it took considerable time by the method employed, approximately thirty days, to effect a cure. Cures are hastened, and patients are relieved of their suffering much sooner, it is said, by supplementing diathermy with 2 per cent zinc sulphate solution by the ionization method with Galvanism; it then requires but seven or eight treatments to effect a cure. It is claimed if the local temperature can be raised to and maintained at 106-108 degrees F. in the pelvic organs, gonorrhoea in the female, as well as the male, can be cured in five hours—that all gonococci may be killed. My treatments were of thirty minutes duration, given practically every day. At the same time the writer treated the woman patient, he treated the husband, the offender, and he, too, was cured in a similar time limit as his wife. No gonococci could be demonstrated by smear at the discontinuance of the treatments, and there has been no recurrence of the disease in either patient. The treatments are rather tedious, time consuming and expensive. It cost this family approximately $150.00 to get cured of their trouble by means of diathermy.

The pains of pleurisy and pneumonia are appreciably relieved by treatments with diathermy, and the literature is rife with instances where relief was paramount. Recovery was unquestionably hastened and the mortality lessened in these conditions. Methods of treatment are often referred to in the lay press as "Dr. Heat." Heat has done much to minimize the suffering from disease, and when heat is indicated, diathermy, when available, has no superior as a means of relief of pain.

In treating benign and malignant lesions about the face, head, lips, mouth, tongue, throat, where bleeding is a complicating factor, high frequency currents have practically replaced other methods of treatment in these areas, when the physician is equipped and trained to use them. Bass, of Durham, N. C., states in his article, High Frequency Currents in the Treatment of Cancerous Lesions about the Face, Head, Mouth, Lips, Tongue and Throat, that: "High frequency curernts have the unique quality of distorting and destroying embryonic malignant cells lurking in the tissues well beyond the lesion treated, and, by so doing, obviate metastases by avoiding too much handling of the tissues by classical surgery," meaning, however, said he not to detract from any satisfactory method of treating cancerous conditions in these areas, but to establish the superiority of high frequency currents.

Diseased conditions treatable and benefited by diathermy are too numerous to go into detail concerning them or the methods of treatment, but I do want to place a little special emphasis upon the question of electrocoagulation of tonsils.

The literature is becoming voluminous with articles on the subject of electrocoagulation of tonsils. While there are those who oppose the method, it is generally conceded by practically all those having had sufficient experience with the newer method of tonsil removal, that diathermy is a valuable adjunct in the extirpation of tonsils.

In reviewing several articles published on the subject by the Consulting Bureau of W. F. Prior Co., Inc., of Hagerstown, Md., articles of seven different authorities from this source of information were more or less in accord, with but a single exception. John J. Gurtov did not exactly believe in the method, his reason being that he could do surgical tonsillectomies on the aged and infirm, arthritic and serious cardiac patients, under local anesthesia, without surgical shock. Unfortunately, many oral surgeons or specialists are not so adept in the surgical removal of tonsils. Those who claim to be able to remove tonsils surgically, without surgical shock, should have their own tonsils removed by that method by one claiming to be able to do it without surgical shock, under local anesthesia.

Seeing is believing, and apparently, the other six authors favoring electrocoagulation thought very differently. Electrocoagulation of tonsils is as difficult to learn expertly as the game of golf, and few there be who master it. One should do at least 200 successful electrocoagulations of tonsils to be considered an expert.

From Hollander's article, Electrosurgical Tonsillectomy, quoting: "During the past six years, the author has performed over 200 tonsillectomies by electrocoagulation. When an equal number of surgical removals are compared with those done by electrosurgery, certain definite observations stand out:

"1. For local surgical tonsillectomy, infiltration of novocaine gave an adequate painless field for operation. Infiltration anesthesia proved unsatisfactory for the electrosurgical procedure because the waterlogging of the tissues added greatly to the severity of the local reaction. Topical applications of cocaine solutions was not sufficient to insure against pain in electrocoagulation treatments. When topical anesthesia was employed, the severe local reaction which followed infiltration anesthesia was absent with electrosurgery.

"2. The local reaction of surgical removal was in most instances less than that of electrosurgery when infiltration of novocaine was employed. The local reaction from electrosurgery was always less with topical anesthesia than with surgery with infiltration.

"3. The period of convalescence from surgical tonsillectomy varied from two to ten days, with an average of absence from occupational duties of three days. When fractional electrocoagulation was used, the patients attended their usual duties each day, and only in a few instances were unable to partake of their regular meals.

"4. Hospitalization was routine with the surgical removals, while the office served for the electrosurgical method.

"5. In the surgical tonsillectomies, no secondary

hemorrhages were encountered, and in only one instance was there severe hemorrhage at the time of the operation. No primary or secondary hemorrhages occurred in my series of electrosurgical removals.

"6. There were no unusual complications from either the surgical or the electrosurgical method."

Such a report as outlined by Hollander is substantial proof of a well-groomed or skilled operator. Hollander did not report his percentage of post-operative tonsillar remains in his series. Rhodes and Dick report, in their routine physical examination of nurses entering training in the Cook County and Presbyterian Hospitals, in Chicago, the incomplete removal of 294 out of 403, who had had their tonsils removed surgically, or a failure of 73 per cent. The remaining tonsillar tissue was found to contain more pathogenic bacteria than the tonsil in its state prior to removal. Further, the conditions from which these student nurses primarily had their tonsils removed did not improve until the recurrent tissue was removed. These cases were finally treated by means of electrocoagulation, or electrosurgery, with gratifying results.

This statistical report further states that 73 per cent failures with surgical tonsillectomy is too high for efficient operators, but goes on to venture the assertion that one has only to witness a few tonsil operations to be convinced that the figure as stated above has not been exaggerated. It must be remembered, however, that very few of these cases were operated upon by the same surgeon, for these patients or student nurses came from practically every state in the Union.

Indications for Electrocoagulation Removal of Tonsils Are

1. An outstanding indication for electrosurgical tonsillectomy is hemophilia. The physician hesitates to remove the tonsils of a patient with anemia or true hemophilia, or one with delayed clotting time from any cause. This rule applies also, but to a lesser degree, to cardiac patients. While surgery can be performed successfully in a large percentage of the latter, a substitute method is more desirable, especially so if surgical shock is to be avoided.

2. Other indications are tuberculosis, hypertension, nephritis, post-operative tonsillar remains, tabs, or tonsil stumps, lymphoid hypertrophy, the aged and infirm. Every article one reads nowadays on the subject of electrosurgical removal of tonsils, concedes that diathermy is the ideal or method par excellence for the removal of post-operative tonsillar-remains from any cause. In the writer's personal experience, he has seen and treated patients that had had as many as three surgical attempts at removal of his or her tonsils, and still there was present sufficient tonsil tissue, or lymphoid hypertrophy, to require as many as two electrocoagulation treatments to free the fossae of debris, etc. To use other than the electric needle in these cases, one is insistent upon converting a simple procedure into a major or minor tragedy again and again. The writer has treated more than 250 tonsil patients by means of electrocoagulation, with approximately 2,000 individual treatments, with satisfactory results, except in those cases where advice had been sought elsewhere concerning the newer method of treatment, etc. In these cases, results have been doubly bad for several reasons:

First, when a patient seeks advice elsewhere and meets with unfavorable, unwitted criticisms, he ceases to cooperate in many instances, and, by so doing, avoids payment of the fee, leaving a job incompleted.

Second, after the tonsils are practically all removed, or well onto being entirely or completely removed, in many instances the writer has had patients return and tell him different tales of woe from "Dr. so and so" who tells him that his tonsils are not "out" and should be "cut-out," etc. Not infrequently, however, some patients meet with more favorable suggestions, and are encouraged to follow the advice of the doctor who is doing the work, as "he probably knows more about the method than I do." Complete removal of the tonsils is recommended, and one should not be satisfied until this is done for best results. Unwitted criticism has done much to thwart success, for many patients would have carried out his or her part of the agreement had they not been interfered with. Waring, of Cincinnati, reports just such an experience, and, in spite of this, he is favorable to the newer method, in the face of an extensive ear, eye, nose and throat practice.

In spite of the ever growing enthusiasm for this newer method of removing tonsils, there are numerous disadvantages. One of these is the special study required to learn the method. The cost is practically prohibitive. Due to the apparent sim-

plicity of the procedure, physicians may attempt electrocoagulation of tonsils without adequate training and experience and secure bad results. Diathermy, incorrectly employed, can produce the same mutilation of normal structures as poor surgery. Another disadvantage is, diathermy or electrosurgical removal of tonsils in children is not practical, because children cannot cooperate. Ether has to be used with them, of course, and then taken away, but, by attaching the current from a high frequency apparatus to any of the instruments, much better results may be obtained, if it is claimed, for there will be less or no bleeding and much more prompt healing. High frequency currents may be attached to any of the instruments, such as the Sluder or snare, according to Howard Kelly and Grant E. Ward, of Johns Hopkins and the University of Maryland, respectively. One can easily use poor judgment in the selection of his cases, and bad results and poor cooperation may then be expected. The very nervous patient is not a good subject for electrosurgical tonsillectomy.

In four years experience, not the slightest tendency to tonsil recurrence has been seen by the writer or reported by any authority.

Balmer reports improvement in the patient's general health during the treatments by electrocoagulation removal of tonsils, and one doing electrocoagulation of tonsils will not infrequently have this experience. The explanation for it is the sterilizing effect of the current on the diseased tonsil tissue, with the removal of a certain amount, by drainage, of the toxic material, the cessation of toxic absorption being no doubt a factor. In addition to this, it is believed, and taught, that the coagulated tonsillar tissue that remains *in situ* for eight to ten days following each treatment (treatments are usually given two weeks apart) acts similarly to the injection of an autogenous vaccine or protein. The products of protein decomposition from the electrically killed bacteria and tissue elements are continuously absorbed by the vascular and lymphatic systems, causing a defense reaction to ensue in the organism. This has undoubtedly been the experience of every physician who properly employed electrocoagulation, for it does occur, and often on the same day treatments are begun.

In the removal or eradication of hemorrhoids by hydrolysis, a chemical current or Galvanism, limited in the writer's hands, to five patients, results have been equal in outcome to the results reported or claimed by the masters in this field. Prompt relief of congestion and pain were noticeable as an early response to treatment, often experienced before the patient left the office, with final recovery. Occasionally it seems that tonic contraction of the sphincter and levator muscles occurs, this effect being interpreted by those unfamiliar with this method of treatment as stricture formation. Dilating or stretching these muscles, or the lapse of a little time, will cure this unimportant complication. Except for the discomfort it affords, this complication need not be reckoned with.

Hydrolysis or Galvanism still remains the only safe depilatory for the removal of superfluous hair from the faces of fastidious women. My experience with this method of hair removal has been attended with good results, with essentially no scarring and with practically 100 per cent cosmetic effect. It requires, however, some special knowledge, a steady hand, and good eyes to do this class of work.

With acusection—surgical cutting current—the writer has had no actual experience, but it is taught by Kelly and Ward that this adds much to be desired to the orthodox surgeons armamentarium. Kelly and Ward have made valuable contributions to the knowledge of electrosurgery, and have made possible certain operative procedures in some pathological conditions that had hitherto been considered inoperable.

To remove electricity from the armamentarium of the medical and surgical practitioners would mean the ruination of many of our best physicians and surgeons. The Roentgen ray, transillumination-diagnostic apparatus, cystoscopes, high frequency currents, electric cauteries, electrocardiographs, etc., would be of no further use.

Waves of interest in electrosurgery, amounting to enthusiasm in some quarters, followed each important discovery of new properties of electricity. Hope following disappointment may fairly be likened to a *sine curve* of medical interest as we view the period of Otto von Guericke to the beginning of the 20th century. There has been so steady an advance in our knowledge of the effects of the various forms of electricity upon the tissues of the living organism, that it may be confidently assumed that physiologically measured results will stand the test of time. The method of experiment of William Gilbert, with ever growing power to measure physio-

logic response, has replaced slavish reliance upon clinical data, and, as a result, numerous electrotherapeutic principles of the greatest importance have been developed.

Workers in this field must continue their researches, focusing upon electrotherapeutic problems the clear thinking of a group of biologists, physicists, chemists and clinicians of high order.

Reynolds Arcade Building.

Woman's Auxiliary to the Medical Society of Va.

President—MRS. JOSEPH BEAR, 3012 Monument Ave., Richmond.
President-elect—MRS. FLETCHER J. WRIGHT, Petersburg.
Recording Secretary—MRS. JAMES B. STONE, 2042 Park Ave., Richmond.
Corresponding Secretary—MRS. AMBROSE MCGEE, 4107 Kensington Ave., Richmond.
Treasurer—MRS. REUBEN F. SIMMS, 2034 Park Ave., Richmond.

An Invitation to the Norfolk Meeting.

The Annual Meeting of the Woman's Auxiliary to the Medical Society of Virginia will be held in Norfolk, October 15th to 17th.

A cordial invitation is extended to each and every woman member of the doctors' families to attend this meeting.

The committee is anticipating with great pleasure your coming to Norfolk. An interesting program is being planned, and everything possible will be done to make your visit enjoyable.

If you have never attended a meeting of the Auxiliary, you can not realize the pleasure obtained from contact with the splendid women who are the officers and members of the Virginia Auxiliary.

The program for the Norfolk meeting includes a "Bring Your Husband" Reception on Wednesday evening, October 16th, honoring the President of the Medical Society of Virginia, Dr. Frank Smith and Mrs. Smith of Abingdon, Va.; the President of the Auxiliary to the Medical Society of Virginia, Mrs. Joseph Bear of Richmond; and officers of the Auxiliaries to the American Medical Association and the Southern Medical Association.

It is hoped that you will accept the invitation to meet these guests. We know that your presence will greatly benefit the meeting, and we feel assured that you will return home with renewed inspiration.

Most Cordially,

MRS. EUGENE LOWENBERG, *President,*
MRS. SOUTHGATE LEIGH, *Chairman,*
Woman's Auxiliary to Norfolk County Medical Society.

Auxiliary to the Princess Anne County Medical Society.

Last spring a group of physicians' wives of Virginia Beach organized as an Auxiliary to the Princess Anne County Medical Society. Already these women have launched a most noteworthy piece of work—a campaign to persuade the members of the Princess Anne County Board of Supervisors that hospitalization for the county indigent is necessary. They sent letters to officials of all civic organizations in the county, to pastors of various churches, and to others who might be interested, stating the need for such hospitalization and urged all to pledge the aid and support of their organization to the cause. Recently the Board of Supervisors appropriated six hundred dollars to cover a period of six months for this work.

Mrs. R. W. Woodhouse, of Virginia Beach, is president of this Auxiliary.

In behalf of the State Auxiliary, I extend this unit a most hearty welcome and commend them on their splendid achievement.

(MRS. JOSEPH) KATE C. BEAR, *President,*
Woman's Auxiliary, Medical Society of Virginia.

Auxiliary to the Mid-Tidewater Medical Society.

The July meeting of this Auxiliary was held on the lawn of the Country Club at Gloucester Court House and members were welcomed by Mrs. James W. Smith of that county. The meeting was called to order by the president, Mrs. Hawes Campbell, of Enfield.

August was decided upon as the month to launch a campaign in the interest of *Hygeia* and each member was urged to get at least one new subscriber. The loan closet was also presented and other counties urged to found one as has been done in King William.

Mrs. Bear and Mrs. Simms, of the State Auxiliary, were guests and gave full and interesting reports of the National meeting at Atlantic City.

Mrs. James W. Smith was appointed delegate to

the State meeting in Norfolk, after which the members were entertained at lunch by the doctors of the county.

In the afternoon a tea was tendered the ladies at White Marsh, the beautiful estate of Mr. H. Baruch.

The James City-New Kent County Auxiliary

Recently met at the home of Mrs. J. R. Tucker, Williamsburg, for its bi-monthly meeting. Seven were present.

After a brief business meeting, Mrs. Tucker gave us a very interesting paper on "The Importance of Milk in our Diet" and a short sketch of the life of "Jane Todd Crawford."

The hostess served delicious refreshments, after which we adjourned to meet with Mrs. T. B. Henderson in September.

MRS. L. V. HENDERSON, *Reporter.*

Public Health Statistics

I. C. RIGGIN, M. D.
State Health Commissioner of Virginia

The communicable disease reports received at the office of Dr. G. F. McGinnes, State Epidemiologist, during the month of June, 1935, show the following cases compared with the same month in 1934:

	1935	*1934*
Typhoid and Paratyphoid Fever	106	123
Diphtheria	37	47
Scarlet Fever	51	71
Measles	211	619
Meningitis	14	4
Poliomyelitis	246	4
Rocky Mountain Spotted Fever	11	12
Typhus Fever	2	1
Undulant Fever	2	1
Tularaemia	4	1
Smallpox	1	0

DIPHTHERIA

Now is the time to immunize against diphtheria. The last two weeks in October and the first week in November is the period of highest incidence of this disease in Virginia and no child should be allowed to go through this season without being protected. Since immunization against diphtheria is so easy to acquire, it is unnecessary to run the risk of being ill and even dying from this disease. Particularly does this apply to children of pre-school age. In 1933 nearly 40 per cent of all cases and 76.5 per cent of deaths from diphtheria in Virginia were in children under six years of age.

In a study of several thousand children it has been shown that in the pre-school age less than 50 per cent of the children are naturally immune to diphtheria. With increasing age, the percentage of naturally immune increases gradually up to ten or twelve years and from then on about 64 per cent show natural immunity.

Education of the population as to the value of diphtheria immunization must continue and be extended in spite of the accomplishments already made in this direction. For example, in Syracuse, New York, 667 families in which there were children without diphtheria protection were interviewed. It was found that 75 or 11 per cent of the heads of these families had not had their children protected because they did not realize the necessity for protection nor how easily it could be had.

A recent study in Virginia showed that one dose of Alum Precipitated Toxoid will produce immunity within six weeks in over 90 per cent of the children. Moreover, studies thus far show that the immunity from Alum Precipitated Toxoid continues in over 90 per cent of the cases for at least one year and it is anticipated that this immunity will last through the dangerous period of childhood.

Each physician should make it his responsibility to see that every child in his practice is immunized against diphtheria. Babies six months or more old should be given one dose of Alum Precipitated Toxoid. Children entering school this fall should be Schick tested and if found positive treated with toxoid.

For the past three years there have been roughly two thousand cases of diphtheria annually in Virginia. Each year there is a new non-immune population. If efforts to immunize are relaxed and the number of susceptibles is allowed to increase the morbidity rate from diphtheria is bound to be higher. Therefore, immunization must continue to keep diphtheria at its present level and to make it still lower. One dose of Alum Precipitated Toxoid per child is all that is necessary.

NOTE: Toxoid is available at the office of the State Health Department.

Truth About Medicine

NEW AND NONOFFICIAL REMEDIES

The following products have been accepted by the Council on Pharmacy and Chemistry of the American

Medical Association for inclusion in New and Nonofficial Remedies:

Polyanaerobic Antitoxin (Tetanus—Gas—Gangrene) Refined and Concentrated (U. S. S. P. Co.).—An anaerobic antitoxin preparation (New and Nonofficial Remedies, 1935, p. 366) prepared by immunizing horses with the toxins of B. tetani, B. perfringens (B. welchii) and vibrion septique. When trial bleedings indicate that the potency is sufficiently high, the horses are bled into anticoagulent and the plasma concentrated and refined by methods according to the Park-Banzhaf process. It is marketed in packages of one syringe, one prophylactic dose. U. S. Standard Products Co., Woodworth, Wis.

Aminoacetic Acid—Merck.—A brand of aminoacetic acid—N. N. R. (J. A. M. A., April 6, 1935, p. 1241.) Merck & Co., Inc., Rahway, N. J.

Antipneumococcic Serum (Felton) Types I and II Refined and Concentrated.—An antipneumococcic serum (New and Nonofficial Remedies, 1935, p. 377) prepared by immunizing horses against highly virulent but dead cultures of Diplococcus pneumoniae isolated from lobar pneumonia. The product is refined and concentrated by a method devised by Dr. L. D. Felton. It is marketed in packages of one vial with syringe attachment containing 10,000 Felton units each of types I and II pneumococcus antibodies, and in packages of one vial containing 20,000 Felton units. Parke, Davis & Co., Detroit.

Refined Diphtheria Toxoid, Alum Precipitated—Squibb. This preparation (New and Nonofficial Remedies, 1935, p. 397) is also marketed in packages of one 1 c.c. vial, in packages of ten 1 c.c. vials and in packages of one 10 c.c. vial, representing one, ten and ten immunizing doses, respectfully. E. R. Squibb & Sons, New York.

Ampul Solution of Dextrose, 10 Gm., 20 c.c.—Each ampule contains dextrose C. P. anhydrous (New and Nonofficial Remedies, 1935, p. 280) 10 Gm. in distilled water to make 20 c.c. The National Drug Co., Philadelphia.

Ampul Solution of Dextrose, 25 Gm., 50 c.c.—Each ampule contains dextrose C. P. anhydrous (New and Nonofficial Remedies, 1935, p. 280) 25 Gm. in distilled water to make 50 c.c. The National Drug Company, Philadelphia.

Ampul-Vial Solution of Dextrose, 25 Gm., 50 c.c.—Each ampule-vial contains dextrose C. P. anhydrous (New and Nonofficial Remedies, 1935, p. 280) 25 Gm. in distilled water to make 50 c.c. The National Drug Company, Philadelphia.

Ampul-Vial Solution of Dextrose, 50 Gm., 100 c.c.—Each ampule-vial contains dextrose C. P. anhydrous (New and Nonofficial Remedies, 1935, p. 280) 50 Gm. in distilled water to make 100 c.c. The National Drug Company, Philadelphia. (J. A. M. A., July 13, 1935, p. 119.)

PROPAGANDA FOR REFORM

Dinitrophenol and Cataract.—Reports have been received of several cases in which cataract seems to have occurred almost in the form of a malignant development in persons who had been taking dinitrophenol for long periods of time. The coincidence is of interest regardless of whether or not it may be established that the disturbance arose because of the dinitrophenol or because of some other undetected cause. The possible occurrence of toxic contaminants in preparations of dinitrophenol must be considered. The possibility also exists that the cataracts may have resulted from associated malnutrition and an unbalanced diet. Warnings have appeared in *The Journal* from time to time concerning the dangers of uncontrolled use of new preparations of this type. The incident here recited serves as a further warning against use of these products until the actual merits and dangers may be more definitely determined. (J. A. M. A., July 13, 1935, p. 124.)

Book Announcements

Surgery of a General Practice. By ARTHUR E. HERTZLER, M. D., Chief Surgeon, Halstead Hospital; Professor of Surgery, University of Kansas. And VICTOR E. CHESKY, M. D., Chief Resident Surgeon, Halstead Hospital. St. Louis. The C. V. Mosby Company. 1934. Octavo of 602 pages. With 472 Illustrations. Cloth. Price, $10.00.

The present volume is based on Hertzler's "Minor Surgery" which appeared in 1930. In the preface to "Surgery of a General Practice" the authors state, "There is much lamentation over the passing of the general practitioner, yet the whole medical machinery is designed to make his existence impossible . . . the public demand is for services at a minimum cost. . . . It has been our aim to reduce treatment to its simplest terms, recommending time-tried measures, and only one." This aim has been realized and the result is a very practical and highly readable volume which should be of real value to every general practitioner.

Unlike many books on similar subjects the authors have not gone beyond the scope of the title to include unrelated or faddish subjects. A few omissions are noticeable. No mention is made of the tannic acid treatment in burns, or the use of antitoxin in gas gangrene. Despite these, and other minor omissions, and a rather cavalier treatment of transfusions and intravenous injections generally, a sense of balance is maintained throughout and their common-sense approach to commonplace conditions is refreshing.

The senior author's famed humor enlivens many pages, and the illustrations are uniformly good. The volume is well indexed.

HARRY J. WARTHEN.

Objective and Experimental Psychiatry. By D. EWEN CAMERON, M. B., Ch. B. (Glas.), D. P. M. (Lond.) Physician in Charge, Reception Service, Provincial Mental Hospital, Brandon, Man.; Formerly Assistant Physician, Glasgow Royal Mental Hospital, etc. New York. The Macmillan Company. 1935. Octavo of 271-vii pages. Cloth. Price, $3.00.

We might start with the premises that no present-day book on psychiatry is entirely satisfactory. This is due to the almost daily change of views which is taking place regarding psychiatry. Dr. Cameron's book for the first fifty pages is largely defensive and pooh-poohs both the observational and projectional methods of etiology and therapy. He minimizes the value of the patient's concept of his own condition and of the factor of psychic pain and stresses the objective and experimental methods, although admitting that these methods are frequently not very conclusive. He reviews most extensively the study of experimental methods and quotes the literature bearing upon these methods. American experimentors are very freely quoted, especially Cobb, Lennox, Trentszch, Pollock, Hoskins and Freeman. By far the best chapter in the book is the one devoted to conditioned reflexes in which he gives a very clear explanation of Pavlov's and Bechterev's ideas on conditioned reflexes. He then applies these ideas to emotions and psychoses. The book is well written and is especially useful as a reference book for medical literature bearing on the various subjects. The reviewer, however, cannot but feel that observation and projection on the part of the psychiatrist has a distinct and possibly more distinct value than various material tests and laboratory experiments, certainly at present. The reviewer also feels that such self-analytical books as Beer's, "The Mind that Found Itself," have thrown great light on psychiatry.

BEVERLEY R. TUCKER, M. D.

Clinical Laboratory Methods and Diagnosis. A Textbook on Laboratory Procedures, with Their Interpretation. By R. B. H. GRADWOHL, M. D., Director of the Gradwohl Laboratories; Director of Laboratories, St. Louis County Hospital; Chief of Staff and Pathologist to Christian Hospital, etc. St. Louis. The C. V. Mosby Company. 1935. Octavo of 1028 pages, with 328 illustrations in the text and 24 color plates. Cloth. Price, $8.50.

The two weeks' time allotted to the review of this volume is hardly sufficient for more than a cursory survey of its contents. The many formulae, equations, charts, tables, etc., could not be thoroughly checked but the few checked were found to be accurate. The volume is profusely illustrated, there being 328 illustrations, most of which are excellent and helpful. A few, however, are very poor.

The book was written to aid, not only the laboratory worker and medical student, but the clinician as well, and considerable clinical data are given with interpretations of laboratory findings in various conditions, which gives the book a very practical application.

Chapter I deals with general considerations such as the use and care of the microscope, photomicrography, metric weights and measures, normal solutions, per cent solutions and explanation of hydrogen ion concentration. These things are explained in detail and are especially valuable for technicians, student technicians and medical students. Chapter II deals with urinalysis and interpretation of urinary findings in various conditions. In Chapters III and IV the subjects of blood chemistry and hematology are fully covered. Chapters V, VI and VII cover gastric analysis, examination of duodenal contents, examination of puncture fluids and sputum. Chapter VIII gives special tests such as test for rabies, tests for pregnancy, hypersensitiveness, atopy, chemical analysis of milk, mycological diagnosis, autogenous vaccines and semen appraisal. Chapters IX and X deal with feces, parasitology and diseases due to changed nutritional conditions. Chapters XI and XII give the bacteriologic applications to clinical diagnosis and serology. Under serology both complement fixation and precipitation tests are given and the precipitin test for the identification of human blood. Chapter XIII deals with basal metabolism tests and Chapter XIV with post-mortem examinations. Chapters XV and XVI give technics for tissue cutting and staining and preparation of museum specimens. Chapter XVII deals with toxicologic technic and Chapter XVIII discusses the minimum supplies, equipment and reagents needed for pathologic laboratories.

It can be seen from this brief outline that the volume contains practically all of the tests that would be used in a clinical laboratory, giving one or more standard methods and usually references, so that one might have easy access to additional information on the methods given. I feel that this volume would be a welcome addition to any laboratory library. REGENA C. BECK, M. D.

Virginia Medical Monthly

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Editorial

The Paradoxes of Poliomyelitis.

We call it infantile paralysis, but only a small proportion of its victims are infants, and less than one out of sixteen who are attacked by the disease develop paralysis, and many of these recover muscle function almost completely.

The spread of no other disease occasions such general alarm as poliomyelitis, and yet there has never been a pandemic such as has frequently occurred of influenza for example. When outbreaks of poliomyelitis have assumed epidemic proportion they have been remarkably restricted, rarely exceeding in this country the boundaries of more than one or two states.

Although undoubted instances of its sporadic manifestations are on record as early as the time of ancient Egypt and we are now accustomed to look upon it as one of our common epidemic diseases, the first well-known record of the epidemiological manifestations of poliomyelitis (Medin) is hardly fifty years old.

Most epidemic diseases show fairly predictable periodicity—measles for instance. The outbreaks of poliomyelitis are extremely irregular and do not conform to recognized epidemiological laws.

The fact that individuals who have poliomyelitis usually enjoy life-long immunity from a second attack, and that experimentally animals show resistance to reinfection, suggests the presence of antibodies of high titre in the so-called immune serum. Yet, in a number of instances, carefully controlled attempts to abort the disease in the pre-paralytic stage by the use of immune serum have not produced convincing results.

Contrary to expectations the serum of normal persons, persons who are not supposed to have had poliomyelitis, appears to be about as effective in neutralizing emulsions of the virus as the so-called immune serum.

Although pathological studies suggest the intestinal tract as the portal of entry of the virus, recent animal research indicts the naso-pharynx, indicating extension along nerve fibres, and epidemiological study emphasizes the importance of droplet infection.

Although the cerebro-spinal lesions of poliomyelitis, particularly those of the anterior horn, have dominated pathological descriptions, it is widely claimed that poliomyelitis is primarily a disease of the reticuloendothelial system with widespread evidence of general lymphoid hyperplasia.

Although the disease strikes rich and poor alike, the favored as well as the unfavored, certain individuals appear to be practically immune to its ravages. They are those persons who are the fortunate possessors of the so-called B agglutinins in their blood.

Although spinal puncture has been highly re-

garded as a therapeutic procedure, there seems to be accumulating evidence that in those instances in which it is resorted to before the disease has reached the cord structures, or where an excessive amount of cerebro-spinal fluid is withdrawn, it may do actual harm.

Although a mononucleosis is usually described as the typical cell change in the spinal fluid of poliomyelitis, in many instances a polymorphonuclear leucocytosis is the finding.

The Drinker respirator is popularly regarded as a life saver in the bulbar type of case, but those with experience in the use of this apparatus now tell us that it may do more harm than good, and that its use should be restricted to those spinal cases in which there is weakness or paralysis of the accessory muscles of respiration.

Although the disease is still generally considered a systemic infection, at least in its earliest stage, the right of the general practitioner to assume complete management of it has been challenged by at least three specialists—the neurologist, who maintains that its cerebro-spinal manifestations place the disease in his domain, the orthopedist, who views its crippling and deforming sequelae as peculiarly entitling him to the care and treatment of the disease even in its acute manifestations, and the pediatrician who quite naturally considers the age incidence of the disease as entitling him to certain priorities.

Vaccination in Poliomyelitis.

Two vaccines are prominently before the medical profession at the present time.

Kolmer's vaccine is a pooled 5 per cent suspension of the emulsified cords of poliomyelitic monkeys in 1 per cent sodium ricinoleate to which has been added 1:80,000 phenyl mercuric nitrate. It is administered in three weekly ascending doses of from .5 c.c. to 2 c.c. according to the age of the patient. Aside from slight local reactions few untoward effects have been reported. Kolmer and others have showed that this type of vaccine protects monkeys from otherwise fatal doses of poliomyelitis virus. He has showed also in a small group of twenty-five children of various ages that 75 per cent of those without the presence of antibodies in their blood before vaccination develop large amounts (as demonstrated by virus neutralization tests) as early as one week after the last dose of vaccine.

It is recognized that Kolmer's vaccine consists of a live though attenuated poliomyelitis virus (a virus that has been fixed by repeated animal passage and whose virulence has been lessened by the addition of sodium ricinoleate). The vaccine is capable of giving poliomyelitis to monkeys if administered intracerebrally in sufficient doses. It is believed that the virus actually multiplies after it has been injected into the human body, the size of the dose and the route of inoculation making this a favorable rather than an unfavorable result. The duration of immunity conferred by the vaccine is unknown. Kolmer has to date inoculated more than 6,000 children with it without any untoward results. It may be obtained directly from him at small cost.

Brodie's vaccine consists of a 10 per cent virus suspension of the emulsified cords of monkeys inactivated with .1 per cent of formalin for from sixteen to forty-eight hours. It is given in a single 5 c.c. dose or repeated after ten days. The latter method is said to give greater protection. Brodie's vaccine has now been given to more than 4,000 children with only negligible reactions and he considers it perfectly safe as no amount of the vaccine injected intracerebrally in monkeys is capable of producing the disease. Demonstrable antiviral substances can be shown in the sera of vaccinated children and it is believed that the degree of protection is "quite appreciable." Brodie's vaccine while being employed experimentally on an extensive scale is still not commercially available.

The average doctor will want to know are these vaccines safe? Do they produce immunity? Is the immunity sufficient to protect against the disease? And how long does immunity last? The last two questions appear to be yet unanswered.

Serum in Poliomyelitis.

The case for serum may be summarized briefly by saying that poliomyelitis is considered by many to begin as a systemic disease (pre-paralytic stage) with a definite period during which the central nervous system is not involved and during which theoretically an antibody potent serum should prevent paralysis. Antibodies capable of neutralizing poliomyelitis virus can be demonstrated in the blood of convalescents and even in certain normal individuals. A number of investigators have reported

the favorable use of convalescent serum clinically in several large series of cases.

On the other side it is argued that poliomyelitis is not a systemic disease at any time but a neurological disease from the onset, that virus is fixed to nerve tissue possibly as early as the period of incubation, that serum cannot reach the virus by the blood route and that even if it could there is evidence to show that the virus can multiply even in its presence. Even large doses of immune serum have failed to protect monkeys from infective doses of virus if given after inoculation. In those instances in which clinical trials of convalescent serum have been carefully controlled and used on a sufficiently large scale no convincing results have been shown to follow its use.

The Ideal Immune Serum.

Landon and Smith in their *Handbook* on poliomyelitis suggest several criteria for a theoretically effective convalescent serum in the treatment of acute anterior poliomyelitis. According to them it should be of known neutralizing titre. It should be obtained from a woman possessed of the B type of agglutinin and should be collected during the third month of pregnancy. The donor must have recently recovered from an abortive attack of poliomyelitis. Finally it should be administered in sufficiently large dosage.

Better Diagnosis in Suspected Enteric Infections.

The Widal reaction has long served a useful diagnostic purpose, but for a number of years physicians have recognized that certain of its results may be misleading unless interpreted in the light of the patient's past history. A previous enteric infection or vaccination, especially in the presence of an acute febrile disease, was known to be sometimes provocative of a positive agglutination reaction when typhoid fever or paratyphoid fever was not at the time responsible for the patient's symptoms.

Within recent years, due chiefly to the work of Felix, it has become possible by laboratory procedures interpreted in terms of the patient's history to distinguish between active cases of enteric infection and those in which some non-specific infection has aroused the latent agglutination properties of the blood serum. This whole subject is briefly and clearly set forth in Miss Corpening's article which appears elsewhere in this issue of the MONTHLY.

Department of Clinical and Medical Education of the Medical Society of Virginia

Pediatric Clinics.

The fourth and last of the clinics in Pediatrics conducted by this Department during the year was completed on August 2nd. The clinic was sponsored by the Norfolk County Medical Society and meetings were held daily for two weeks in the Kings Daughters Clinic Building in Norfolk. The clinician for the course was Dr. George M. Lyon, Specialist in Pediatrics, of Huntington, W. Va. The following physicians were in attendance:

Dr. E. Ray Altizer
Dr. T. W. Blanchard
Dr. T. L. Brooks
Dr. A. M. Burfoot
Dr. W. L. Harris
Dr. W. A. Hoggard
Dr. W. P. McDowell
Dr. P. St. L. Moncure
Dr. F. N. Mullen, Jr.
Dr. J. L. Rawls
Dr. L. N. Simpson
Dr. J. R. Spencer
Dr. F. D. Wilson

During the year the Department has held four clinics in the following places:

	Members	*Visitors*
South Boston	14	2
Christiansburg	11	4
Nassawadox	12	3
Norfolk	8	5
Total	45	14

Dr. Samuel F. Ravenel, of Greensboro, N. C., conducted the first two clinics and Dr. George M. Lyon was the Clinician for the courses at Nassawadox and Norfolk.

GEORGE B. ZEHMER,
Executive Secretary.

Proceedings of Societies

Augusta County Medical Association.

At the regular quarterly meeting of this Association, held at the Fairway Tavern, near Staunton, on August 7th, the following officers were elected: President Dr. T. R. Rolston, New Hope; vice-presidents, Dr. H. B. Webb, Waynesboro, and Dr. Charles Rodgers, Staunton; secretary, Dr. A. F. Robertson (re-elected), Staunton; and treasurer, Dr. T. M. Parkins (re-elected), Staunton. Delegate and alternate to the State Society meeting were also elected.

A paper was presented by Dr. L. Nelson Bell, Waynesboro, his subject being Medical and Surgical Problems in China. The retiring president, Dr. C. P. Obenschain, Staunton, spoke on Relief of Suffering During Confinement. Dr. Kenneth Maxcy, University, Va., conducted a discussion on Infantile Paralysis.

Fairfax County Medical Society.

At the regular August meeting of this Society, held at Herndon, Va., the following officers were re-elected: President, Dr. Jessie Thornton Scott, Vienna; Dr. F. M. Brooks, Fairfax, treasurer; and Dr. E. S. Waring, Fairfax, secretary. Dr. Sigmund Newman is the newly elected vice-president. Delegate and alternate to the State Society were also named at this time.

The Mid-Tidewater Medical Society

Met at the home of Dr. H. A. Tabb, Gloucester Court House, recently. Dr. R. D. Bates presided in the absence of the president, Dr. E. L. W. Ferry.

Papers were read by Dr. O. T. Amory, Newport News, on "Indigestion"; and Dr. E. L. Alexander, Newport News, on "Antigens and Vaccines and the Uses." Both of these papers were discussed by members and visitors.

Delegates and alternates to the State Society meeting were also elected at this time.

A delicious luncheon was served the members and their visitors by the physicians of Gloucester County, after which they were entertained by a sail on Dr. Blair Spencer's boat.

News Notes

Norfolk Meeting of the State Society.

Now that summer vacations are coming to an end, the attention of the doctors of the State should be focused on the annual meeting of the Medical Society of Virginia to be held in Norfolk, October 15th, 16th and 17th, under the presidency of Dr. F. H. Smith, of Abingdon. This gives promise of being a meeting of great interest and a large attendance is expected.

Several years ago, the Council of the State Society decided that it was too great a burden to impose on a local society to tax its members for entertainment and, in response to a resolution adopted at that time, there has been no entertainment planned for members at the last three sessions. However, feeling that a get-together of the members would add to the interest of the meeting, the Norfolk committee with the approval of the Council has decided to have a subscription oyster roast, each person attending to pay for his own ticket. These tickets, at $1.50 each, may be obtained at the Registration desk at the time of registration. The oyster roast will be on Lynnhaven Bay, twelve miles from the city, on Thursday afternoon, immediately following the morning session, and in time for the doctors to get off on afternoon trains. Transportation will be provided for those who do not have their own automobiles. We hope all members may be able to stay through the meeting for this event.

May we suggest once again that hotel reservations be made in advance if possible, to avoid some of the last minute rush. Names of Norfolk hotels were given in the August issue of the MONTHLY.

Inter-State Postgraduate Medical Association of North America.

The International Assembly of the Inter-State Postgraduate Medical Association of North America

will be held in Detroit, Mich., October 14, 15, 16, 17 and 18, 1935, with pre-assembly clinics on Saturday, October 12th, and post-assembly clinics Saturday, October 19th, in the Detroit Hosptials.

The Association through its officers and members of the program committee extends a very cordial invitation to all physicians in good standing in their State and Provincial Medical Societies to attend the Assembly. An unusual clinical and didactic program including all branches of medicine and surgery and the specialties has been arranged by the program committee.

Attention is called to the list of distinguished teachers and clinicians who will take part on the program which appears on page 24 of the advertising section of this journal.

Dr. Charles H. Mayo, Rochester, Minn., is president of this Association and Dr. William B. Peck, Freeport, Ill., is managing director.

Registration fee of $5.00 admits all members of the profession in good standing.

Dr. R. A. Vonderlehr

Has been detailed as Assistant Surgeon-General in charge of the Division of Venereal Diseases, Bureau of the Public Health Service, Washington, D. C.

Dr. and Mrs. Wm. F. Grigg,

Richmond, Va., have recently moved into their new home at 811 West Franklin Street.

Dr. William Bickers,

Medical College of Virginia, Class of '33, and recent house officer and resident surgeon at the Boston City Hospital in obstetrical and gynecological service, has located in the Medical Arts Building, Richmond, Va. He will limit his practice to obstetrics and gynecology.

Dr. W. L. Thomas, Jr.,

After completing a residency in obstetrics and gynecology at the Duke Hospital, Durham, N. C., is studying obstetrics and gynecology at the Henry Ford Hospital, Detroit, and the University of Michigan, Ann Arbor. He will leave shortly for a year's study in Edinburgh, Brussels, Paris, Budapest, Vienna, Berlin, and Rome. Dr. Thomas graduated from the University of Virginia, Department of Medicine, in 1931.

Medical College of Virginia News.

The report for the fiscal year 1934-35 for the outpatient department of the college shows 66,094 patient visits made by 16,356 individual patients. Four hundred and eighty-three different diseases and conditions were treated, 24,700 laboratory tests of various types made, and 25,189 prescriptions filled for patients.

The Public Works Administration has approved a loan and grant of $61,000.00 for the construction of a new laundry, which will be under way in the near future.

Dr. Harry Bear, dean of the school of dentistry, is spending a month in Europe.

Dr. Walter E. Vest, of Huntington, W. Va., was a recent college visitor.

The ninety-eighth session of the college will begin September 17th.

Dr. Paul Kimmelstiel, of the Mallory Institute of Pathology, Boston, Mass., has accepted a position as associate in pathology and will join the college staff on September 1st.

Dean Wortley F. Rudd of the school of pharmacy attended the eighty-third annual convention of the American Pharmaceutical Association in Portland, Ore.

A new Drinker artificial respirator has been installed in Memorial Hospital, one of the few machines of its kind in Virginia.

Dr. H. C. Spalding,

Richmond, Va., announces the removal of his offices from the Professional Building to 805 West Franklin Street. He will continue his work in obstetrics and gynecology.

Dr. C. C. Hatfield

Has located for practice at Glade Spring, Va. He was recently at the St. Vincent's Hospital in Erie, Pa.

Dr. Griffith President of Waynesboro Board of Health.

At an organization meeting of the Board of Health of Waynesboro, Va., Dr. R. S. Griffith was elected president and Dr. Ernest Mosby secretary, with Dr. J. F. Hubbard as the other member.

Married.

Dr. Adam Tyree Finch, Chase City, and Miss Anne Reynolds Georghegan, Richmond, August 5th. Dr. Finch is a graduate in medicine from the University of Virginia, class of '31.

Dr. Joseph Judson Waff and Miss Mary Elizabeth Hopkins, Shenandoah, Va., August 4th.

Dr. George Hatcher Snead, Richmond, Va., and Mrs. Elizabeth Simmerman Huff, Pulaski, Va., August 17th.

Dr. Warren Coons Corwin, University, Va., and Miss Ella Macha, Baltimore, Md., June 22nd.

Dr. Earle Carlton Gates, class of '32, Medical College of Virginia, now at Fortress Monroe, Va., and Miss Marian Montford Janssen, Kenbridge, Va., August 15th.

Dr. William Morgan Chew, New York, N. Y., of the class of '31, University of Virginia, and Miss Katharine Imelda Salmon, New York, N. Y., August 14th.

Dr. George Alfred Hess, Bridgewater, Va., of the class of '34, University of Virginia, and Miss Helen May Carter, Trenton, N. J., August 18th.

The American Public Health Association

And related organizations will meet in Milwaukee, October 7th-12th, and more than 2,000 professional public health workers are expected to attend.

The scientific program consists of 400 presentations. This year, for the first time, an entire session will be devoted to mental hygiene.

The preliminary program of this session will be published in full in the September issue of the *American Journal of Public Health* and further information may be obtained from the American Public Health Association, 50 West 50th Street, New York.

Dr. Thomas B. Payne

Has been named health officer of Fredericksburg, Va., to succeed Dr. J. Lee Cooke, who died in August.

Reliable Apparatus.

The American Medical Association has issued a small pamphlet containing a list of the apparatus accepted by the Council on Physical Therapy, the first one published under the direction and supervision of the Council. One of the purposes of the Council on Physical Therapy is to protect the medical profession, and thereby the public, against inefficient and possibly dangerous apparatus and against misleading and deceptive advertising in connection with the manufacture and sale of devices for physical therapy. In addition to the list and description of accepted apparatus, the pamphlet contains indications for the use of each type and a statement relative to efficacies and dangers.

Apparatus Accepted includes all the devices accepted by the Council prior to May, 1935. Any physician can obtain this pamphlet free by writing to the Secretary, Council on Physical Therapy, A. M. A., 535 North Dearborn Street, Chicago, Ill.

New Assistants to Dr. Wheeldon.

Dr. Robert Mazet, Jr., and Dr. Frank H. Hedges, Jr., have just been added to the staff of Dr. Thomas Wheeldon, Richmond, Va. Dr. Mazet is a graduate in medicine from Columbia University, College of Physicians and Surgeons, 1928, with hospital experience at the Presbyterian Hospital and the Hospital for Ruptured and Crippled in New York City. Dr. Hedges is a graduate from the same school in the class of 1930 and has done work abroad in pathology in addition to his hospital experience at Johns Hopkins Hospital and the Church Home and Infirmary in Baltimore.

Dr. A. Chester Stutsman,

Class of '31, University of Virginia, has recently located in Humboldt Building, St. Louis, Mo., where he is associated with Dr. M. F. Arbuckle in the practice of otolaryngology. He has received an appointment on the visiting staff of the St. Louis City Hospital in his specialty and has been named an assistant in clinical otolaryngology at Washington University. After leaving the University of Virginia, Dr. Stutsman served a rotating internship at the Church Home and Infirmary, Baltimore, and then went to St. Louis where he did special work at Barnes Hospital and later at the St. Louis City Hospital.

Dr. Frank A. Strickler,

Class of '32, University of Virginia, is now at the Payne-Whitney Psychiatric Clinic of the New York Hospital where he will be until September, 1936. Dr. Strickler has been serving a residency at the University of Virginia Hospital.

Dr. Glenn T. Foust,

Norton, Va., was elected one of the vice-presidents of the Tennessee Valley Medical Association,

at its first annual session held recently. This association is composed of physicians residing in eastern Kentucky and Tennessee, western Virginia and North Carolina, and parts of Alabama and Georgia.

Dr. William A. Farmer.

Is now located at the Puunene Hospital, Puunene, Maui, T. H., after being for a short time in Anderson, S. C.

Dr. and Mrs. L. E. Cockrell,

Reedville, Va., have returned home after a trip to Boston, Mass., and Bangor, Maine.

United States Civil Service Examination.

The U. S. Civil Service Commission has announced open competitive examinations for a number of specialist positions in the U. S. Public Health Service, Treasury Department. Applications must be on file with the U. S. Civil Service Commission, Washington, D. C., not later than September 9, 1935. These positions include several grades of bacteriologist, cytologist, epidemiologist, and mycologist (medical) positions, and the position of senior pathologist (medical).

Dr. Willis F. Evans,

Class of '33, Medical College of Virginia, has located for general practice at Williamston, N. C. He has just completed a two years' service at the Medical College of Virginia Hospital.

Dr. Wilbur M. Bowman,

Petersburg, Va., is the first Virginia physician to become a member of the recently organized American Neisserian Medical Society. Membership in this organization is based upon outstanding work along certain definite branches of the profession.

Dr. Thomas F. Wheeldon,

Richmond, Va., has been named to the orthopedic advisory committee of President Roosevelt's Georgia Warm Springs Foundation.

"On Health's Highway."

This book is designed to present to the public some of the facts regarding the role played by animals in the study of scientific medicine, and of the great value of the advances accomplished by this means, particularly with reference to cancer. It is fully illustrated and covers from the time of Hippocrates to the present day.

Copies of the pamphlet (price 50 cents) may be obtained from the New York City Cancer Committee, 150 East 83rd St., New York.

Dr. and Mrs. Robert Bryan,

Richmond, Va., sailed in July on the *S. S. President Johnson* for a cruise around the world.

The Association of Military Surgeons of the United States

Is to hold its forty-third annual convention at the Waldorf-Astoria Hotel, New York City, October 3rd, 4th and 5th. An excellent program, offering discussions by outstanding men of the country, on the latest scientific phases of medicine, surgery, hygiene and hospital methods, will be presented. In addition, a large number of exhibits by leading medical and surgical supply houses and various Government agencies will be on display.

The Association, through its secretary, Major General H. L. Gilchrist, U. S. Army, Ret., Washington, D. C., extends to the members of our Society a cordial invitation to attend all meetings.

Dr. R. R. Hoskins,

Mathews Va., was named one of the delegates from the American Legion, Mathews-Gloucester Post, to the Virginia Department convention of the American Legion, to be held at Virginia Beach, Va., September 4th-7th.

Dr. Horsley Gantt,

A native of Nelson County, Virginia, but now of Baltimore, Md., was among the speakers at the International Physiological Congress in Leningrad, in August. Only the most prominent workers in physiology in the world were invited to this Congress, and we are pleased to note that one of these is a former Virginian. Dr. Gantt studied under Pavlov in Russia for several years and it is of interest to note that Dr. Pavlov, now about eighty-five years of age, was president of this Congress.

Dr. and Mrs. R. Angus Nichols, Jr.

Have returned to their home in Richmond after a cruise on the *S. S. Georgic* to Halifax, Nova Scotia. Before returning home, they also visited in New York.

For Sale—

One A.C.M.I. Antroscope, complete in case, and one specialist's instrument and treatment cabinet. Address Acmi, care of VIRGINIA MEDICAL MONTHLY. (*Adv.*)

Doctor Wanted.

Wanted a physician who can do laboratory and X-ray work. Address "Lab," care of this journal. (*Adv.*)

For Sale.

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Obituary Record

Dr. William Wallace Bennett,

Blackstone, Va., died August 3rd, following an illness of several weeks. He was born in Ashland, Va., and was sixty-five years of age. Dr. Bennett graduated from the former University College of Medicine, Richmond, in 1899. He had practiced in Blackstone for the past eighteen years. Dr. Bennett was a Mason and a Shriner and had been a member of the Medical Society of Virginia for thirty-five years. His wife and a daughter survive him.

Dr. David James King,

Williamsburg, Va., died August 18th, following an illness of two years. He was seventy-one years of age and a graduate of the Buffalo University in 1900. He had been a resident of Williamsburg for over twenty years and physician to William and Mary College for the past nineteen years. He was a charter member of the Rotary Club and active in the civic and professional life of his community. Dr. King was formerly president of his local society and was a member of the Medical Society of Virginia. He is survived by his wife, a twin brother and a sister.

Dr. Joseph Stuart Hume,

Beloved Norfolk, Va., specialist, died July 29th, after a brief illness with heart trouble and complications. He was forty-six years of age and received his medical degree from the University of Virginia in 1912. Following his graduation, Dr. Hume specialized in eye, ear, nose and throat work in two New York hospitals, after which he saw service in the World War, practicing his specialty at the Base Hospital 41. Upon his return from France, he entered practice in Norfolk. Dr. Hume had been a member of the Medical Society of Virginia for fifteen years. His wife and two children survive him.

Dr. Justus Lee Cooke,

Prominent physician of Fredericksburg, Va., died suddenly August 6th. He was sixty-two years of age and a graduate of the Columbia University College of Physicians and Surgeons, New York, in 1893. Dr. Cooke had been located in Fredericksburg for twenty-two years and at the time of his death, he was city health officer. He took a prominent part in civic activities and had been a member of the Medical Society of Virginia for fifteen years He is survived by his wife and two sons.

Dr. Albert C. Stephens,

Barren Springs, Va., died May 15th, of angina pectoris. He was sixty-five years of age and a graduate of the University of Maryland, School of Medicine, in 1894. Dr. Stephens had been a member of the Medical Society of Virginia for fifteen years.

Dr. William D. Sydnor,

Hamilton, Va., died August 9th, after having been in ill health for some time. He was fifty-nine years of age. Dr. Sydnor was a Mason and a Shriner. His wife and four children survive him.

Dr. James Wilton Thurman,

Pizarro, Va., died July 23rd, following a month's illness. He was seventy-nine years of age and graduated in medicine from the University of Virginia in 1883. A daughter survives him.

Dr. Albert De Kalb Parrott,

Kinston, N. C., died April 19th of chronic myocarditis. He was fifty-two years of age and graduated from the former University College of Medicine, Richmond, Va., in 1906.

Dr. William Harvey Dixon,

Ayden, N. C., died May 29th of angina pectoris. He was sixty-two years of age and a graduate of the Medical College of Virginia in 1901.

Dr. Robert Douglas Roller, Jr.,

Charleston, W. Va., died August 10th, when his car plunged over an embankment. He was a native of Richmond, Va., and was fifty-six years of age. Dr. Roller graduated from the former University College of Medicine, Richmond, Va., in 1905.

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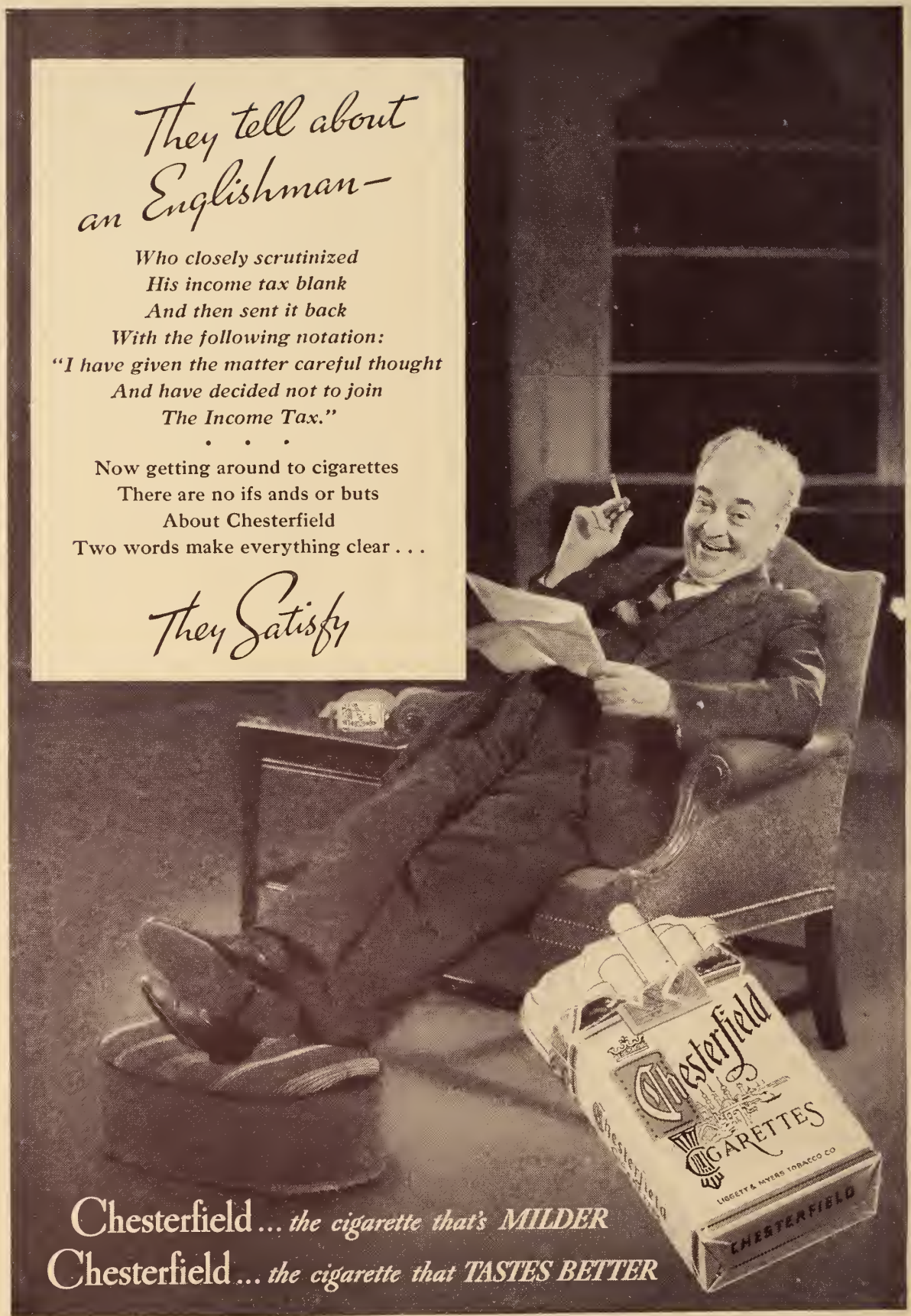
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PROGRESS IN NEUROLOGY AND PSYCHIATRY

The following question was recently submitted by the Editor to a number of American neurologists and psychiatrists: "What do you consider the three most significant advances in the field of neurology and psychiatry in the past ten years?" The MONTHLY believes their answers will prove as interesting to its readers as did the answers to similar questions relating to other specialties published here from time to time.

1. The metapsychology of Freud;
2. The lessons learned from epidemic encephalitis;
3. The advances in endocrinology particularly of the pituitary and gonads.—Smith Ely Jelliffe, New York, N. Y.

1. The Freudian metapsychology;
2. The lessons learned from encephalitis;
3. The studies on the vegetative nervous system, and the therapeutic attack on general paresis. —William A. White, Washington, D. C.

1. The establishment of the function of the premotor cortex and its symptomatology;
2. The control of cerebrospinal fluid volume and pressure, by means of dehydration, spinal drainage and fluid limitation, as a therapeutic measure in the treatment of acute cerebral injuries, the convulsive state and certain chronic diseases of the central nervous system. The diagnostic value of encephalography and spinal fluid measurements in establishing a more exact knowledge of diseases of the nervous system, thus permitting appropriate treatment;
3. The correlation of common cerebral symptoms encountered throughout the field of medicine, with physical hydrodynamic changes occurring within the cranio-vertebral cavity, and the therapeutic measures required for the control of such symptoms as headache, vomiting, convulsions, stupor and coma.—Temple Fay, Philadelphia, Pa.

1. The progress in knowledge of the sympathtic nervous system;
2. The advances in endocrinology, especially in relationship to the hormones of the glands of internal secretion;
3. The increasing interest of the medical profession in the relationship of psychiatry to general medicine.—Frederick P. Moersch, Rochester, Minn.

1. Pavlov's work on conditioned reflexes;
2. Loewi, Cannon, and Dale's work on humoral physiology and the emotions;
3. Ventriculography and encelphalography;
4. T. K. Rivers' work on virus diseases of the C. N. S.—Foster Kennedy, New York, N. Y.

Neurology

1. The opening of new fields for investigations in the neuro-psychiatry of the nervous system from studies of the electrical changes in the nervous system accompanying nervous reactions;
2. Advances in neuro-surgery;
3. Advancements of knowledge of the functions of the vegetative nervous system in neurological and psychiatric disorders.

Psychiatry

1. The integrating of psychiatry among the facilities of the general hospital as a diagnostic and therapeutic aid in relation with somatic disorders and mental problems coming to the hospital;
2. The development of psychiatric teaching in American medical schools;
3. The increasing interest in psychotherapy.—Albert M. Barrett, Ann Arbor, Mich.

1. Malaria and hyperthemia treatment of paresis;
2. Refinements of encephalography and ventriculography for diagnosis, advance in knowledge of pathology, and improved technique in surgery of brain tumors;
3. Liver extract for the prevention and treatment of combined degeneration of the cord in pernicious anemia.—I. S. Wechsler, New York, N. Y.

1. Encephalographic methods of diagnosing intracranial lesions, thus supplementing ventriculography;
2. Wider knowledge of endocrinopathies, especially of the pituitary;
3. General neuropathologic research pertaining especially to tumors of the central nervous system.—George B. Hassin, Chicago, Ill.

THE CONSIDERATION OF CERTAIN LESS COMMON FORMS OF HEART DISEASE.

FREDRICK A. WILLIUS, M. D.,
Rochester, Minn.
Division of Medicine, The Mayo Clinic.

It seems appropriate, from time to time, to place emphasis on certain less common forms of heart disease so that their identity does not become submerged in the vast store of medical information. I wish to discuss briefly three forms of heart disease that occur with sufficient frequency so that their clinical recognition should be the rule rather than the exception. They are (1) calcareous aortic stenosis, (2) adiposity of the heart, and (3) arteriosclerosis involving the pulmonary artery.

CALCAREOUS AORTIC STENOSIS

Until the last five years, calcareous aortic stenosis was, with rare exceptions, a disease recognized only at postmortem examination. However, through the persistent correlation of clinical signs and symptoms and postmortem findings, together with skilful use of the fluoroscope, the lesion is now regularly identified while the patient is alive.

The lesion, with few exceptions, is limited to the aortic valve and consists of the deposit of variable amounts of calcareous material, primarily involving the aortic annulus, frequently one of the valve commissures, and frequently the valve leaflets, although the free margin of the leaflets is involved chiefly when the process is very marked. Fusion of the leaflets tends to occur so that, in the majority of cases, as the deposit of calcareous material occurs, the leaflets become adynamic; this results in a barrier where stenosis predominates but where lesser degrees of aortic insufficiency may also be present. The calcareous process rarely involves the aorta, except the immediate contiguous segment, and in my experience never has extended to the region from where the coronary arteries originate. The left ventricle undergoes hypertrophy, owing to the effect of the stenotic barrier, and the heart, in cases of long standing, may attain enormous weight; the greatest weight in my series was 1017 gm. Associated pericarditis occurs with exceptional infrequency.

Various hypotheses regarding the etiology of this lesion have been advanced. Mönckeberg believed the process to be degenerative in character, with a resulting deposit of calcium. Cabot, while acknowledging infection as an etiologic factor, was inclined to the belief that the nature of the infectious process was different from that occurring in the presence of rheumatic valvular defects. Margolis, Ziellessen and Barnes did not draw definite conclusions regarding the etiology of the lesion, but suggested that in some cases there may be an inflammatory basis while in others there may be a degenerative process. Christian, in spite of a very low incidence of histories of previous illness with rheumatic fever, inclined to the belief that the lesion represents a form of rheumatic valvular injury.

My experience leads me to the belief that the lesion is inflammatory in origin, either infectious or toxic, but that its exact nature is still unknown. The usual solitary occurrence of the lesion, its overwhelming predominance in males, the low incidence of previous histories of rheumatic fever, and the extreme rarity of pericardial involvement, all strongly militate against the rheumatic origin of the lesion. Arguing strongly against the atherosclerotic genesis of the lesion is the fact that in the vast majority of cases in which postmortem study has been made, there has been remarkably little atherosclerosis in portions of the cardiovascular system other than the valve leaflets, annulus and a small contiguous portion of the aorta.

The clinical recognition of calcareous aortic stenosis becomes possible when certain fundamental facts are borne in mind:

It is observed chiefly among men who have passed the age of fifty years. The sex ratio is about six males to one female, and, although occasionally patients are observed who are in the third, fourth, or fifth decades of life, approximately 80 per cent have passed the fiftieth year.

The lesion is very slowly progressive, with symptoms of heart failure appearing late in life, and the

period of survival is usually short after these symptoms have appeared. In the majority of cases the terminal syndrome is that of congestive heart failure, while sudden death occurs only occasionally.

The history usually fails to disclose an apparent etiologic factor. Considerable cardiac enlargement is the rule, although this will vary with the degree of stenosis and with the time that the lesion has been existent.

A rough, reverberant, systolic murmur of great intensity, usually heard best over the aortic area, but frequently audible over the entire precordial area, is a constant finding. It is, likewise, usually transmitted into the carotid arteries.

A systolic thrill is usually, but not always, palpable over the aortic area. It may be evanescent, absent during severe heart failure and reappearing with the restitution of cardiac function as cardiac systole becomes more normal. In some cases its detection is dependent on having the patient lean forward.

In about one-fourth of the cases, the blowing diastolic murmur of aortic insufficiency is present. With few exceptions, an aortic second tone is not audible. This sign, in my experience, has been of untold value in the recognition of calcareous aortic stenosis. Absence of the aortic second tone indicates fixation of the aortic valve leaflets; this condition is found in the majority of these cases.

The pulse is of small volume, and the pulse pressure is normal or decreased, except in cases complicated by aortic insufficiency or hypertension.

In Christian's article of 1931, dealing with this subject, he clearly predicted the roentgenographic demonstration of these calcareous lesions during the life of the patient. Sosman and Wosika in 1933 demonstrated the feasibility of this, and more recently Camp, of The Mayo Clinic, has been able to recognize the lesion in every case in which the patient has been sent to him for special roentgenologic study. His method chiefly involves skilful use of the fluoroscope, although in some cases in which the deposits of calcareous material are considerable, their clear-cut demonstration on films is possible. The patient is examined in the erect posture, in either the right or left oblique position, and a small vision aperture is used, usually 1½ in. (3.8 cm.), to permit selective localization of shadows. The calcified leaflets are thus visualized as dancing shadows moving downward during systole and rotating in a clock-wise manner. When the annulus is the chief seat of calcareous deposit, its elliptical configuration may be clearly seen. Extraneous deposits of calcification are identified by shifts in posture, and the calcification of hilus nodes by having the patient hold the breath, under which condition the shadows cease to move. Calcified portions of the pericardium and aorta are distinguished by their laminar character and their position.

The treatment of patients who have calcareous aortic stenosis is essentially that of any valvular defect. Before the advent of failure, the problem is to restrict the patient's activities, and to institute an individualized regimen. When congestive heart failure supervenes, the procedure is identical to that employed in all cases regardless of type of lesion.

Adiposity of the Heart

The older medical literature contains many contributions dealing with the so-called fatty heart but during recent years little attention has been accorded this interesting and important condition. In 1933, Smith and I investigated the subject again, basing our study on 136 obese subjects who had died from various causes, and on whom careful postmortem examinations had been conducted. In reviewing the literature on the subject we became impressed with the confusion prevailing in many of the discussions through the use of numerous terms that were employed in different ways by various investigators. The terms most frequently encountered were "fatty degeneration," "fatty infiltration," "fatty metamorphosis." "adiposity of the heart," "obesity of the heart," and so forth. From this confusion we were enabled to separate two distinct conditions: (1) the condition in which an abnormal increase in the subepicardial fat occurs and in which penetration of fat occurs into the connective tissue interspersed between the muscle bundles and fibers; (2) the condition in which fatty changes occur within the heart muscle cell (cytoplasm) and which is generally conceded to result from the diminished utilization (oxidation) of the fat normally brought to the cell.

In obese individuals, the first condition described prevails in varying degrees, whereas the condition in which fatty changes within the cytoplasm of the cell occurs rarely, if ever, is found in obese persons, but occurs chiefly in such states as chloroform and

phosphorus poisoning, pernicious anemia, leukemia, and the cachexia of cancer.

We favor the use of the term "adiposity of the heart," as introduced by Beattie and Dickson, to designate the condition which occurs in obesity. When it is recalled that in obesity an increase in deposition of fat occurs in all the normal fat depots of the body, it is possible to begin to visualize the far-reaching influence of this condition on the circulation and on other important components of the body. The normal fat depositories of the body comprise the subcutaneous tissues, the omentum, the mesentery, the bone marrow, the extraperitoneal tissues, the tissues about the kidneys, the orbits and the connective tissue beneath the epicardium. In obesity, concern is not only with the actual increase that occurs in weight of the body, but the enormous increase in the surface of the body that inevitably accompanies the increased size of the body must also be visualized.

It was at one time presumed that fatty tissue was relatively avascular, but careful histologic study of this tissue, after arterial injection, clearly reveals the enormous vascularity of fat; a capillary is demonstrable for every fat cell. Thus, it becomes apparent that in marked cases of obesity the capillary bed of the body becomes enormously increased, thereby greatly extending the peripheral circulation, an important factor in the increased work imposed on the heart. The work of the heart is further increased by the fact that the total metabolism of obese individuals is increased.

The heart becomes handicapped by the marked amount of fat which at times virtually encases the organ, and probably the greatest impairment in function occurs when the fat penetrates into the spaces between the muscle bundles and fibers. This is always most marked in the right ventricle, and in some cases penetration of fat into the papillary muscles is marked.

It is the rule for obese persons to become dyspneic on slight effort and only too often this symptom is looked on as an innocent manifestation of over-weight. It is not an innocent symptom but one that indicates constant and sustained over-burden of the circulatory system.

As a rule, the weight of the heart tends to parallel the weight of the body, so that in obesity it is customary to encounter hearts that weigh considerably more than those of individuals of normal weight. However, in approximately one-fourth of the cases in our series the heart had not increased in weight proportionately with increase in the weight of the body, and it is probable that this discrepancy may have been an appreciable factor in the production of cardiac insufficiency.

It is of interest to note that in 7 per cent of the cases, congestive heart failure occurred, but in none of these cases had there been any evidence whatsoever of cardiac disease, other than cardiac adiposity. The realization of the fact that adiposity of the heart itself may be capable of producing heart failure and death is of utmost importance.

Hypertension occurred in 45 per cent of the cases, and in this group marked degrees of cardiac hypertrophy had occurred. Coronary sclerosis of significant degree occurred in 7 per cent of the cases.

No distinctive clinical syndrome occurs in adiposity of the heart. The symptoms vary from dyspnea on undue effort to congestive heart failure in a small percentage of cases.

Treatment of this condition is chiefly concerned in the gradual reduction of body weight by institution and maintenance of a properly individualized regimen. When such prophylactic measures are introduced prior to the onset of serious symptoms of cardiac impairment much can be accomplished in preventing or deferring serious consequences. In cases in which congestive heart failure is present, the dietary program is supplemented by the usual measures employed in failure.

ARTERIOSCLEROSIS INVOLVING THE PULMONARY ARTERY

The general term, "pulmonary artery arteriosclerosis," necessitates rather specific differentiation, for several distinct processes are recognized. The so-called senile type of arteriosclerosis, involving the larger branches of the pulmonary artery, and similar in all respects to arteriosclerosis in other arteries, is not infrequently observed in senescent patients, and as a rule has little or no clinical significance. However, changes in the smaller arteries and the arterioles ultimately impose on the heart a burden that assumes serious proportions. The changes in the smaller vessels consist of proliferation of the intima and media, and appear to be of two types. In one type, the lession seems to be the result of inflammatory processes such as syphilis,

rheumatic fever, and possibly other infectious diseases, and in the other type, the lesion appears to be the result of increased pressure in the pulmonary circulation. The latter is either the result of primary pulmonary hypertension or increased peripheral resistance resulting from such lesions as mitral stenosis and congenital heart disease, or it is attributable to distortion of the arteriolar-capillary bed, such as may occur in emphysema, in chronic diffuse pulmonary disease particularly when associated with extensive fibrosis, in extensive obliterative pleuritis, or in marked kyphoscoliosis when the internal diameter of the thorax becomes greatly reduced.

When the vascular changes are appreciably marked, the imposed burden causes the right ventricle to undergo hypertrophy, with its impending failure, and when the right side of the heart becomes involved, the disease assumes clinical importance.

Physiologically, the disease may be separated into two stages: first, the pulmonary stage, which obviously precedes the ultimate involvement of the heart, and, second, the cardiac stage, when hypertrophy of the right ventricle occurs. The first may be suspected clinically but is rarely identified except in the presence of pulmonary emphysema, diffuse pulmonary disease, and so forth. The second should be more frequently recognized than it is at this time.

Possibly one reason that the second condition is not recognized more frequently is the demand for the well-known syndrome of Ayerza or the condition which produces the so-called "black cardiac"; this, however, may be only a late manifestation, or may never appear.

The most common symptom of the vascular changes involving the smaller branches and the arterioles of the pulmonary artery is dyspnea. This is likely to occur with very little effort and is usually promptly relieved when the patient is at complete rest. Later in the disease, dyspnea may be a constant phenomenon. The tendency to recurrent bronchitis frequently exists. Repeated episodes of hemoptysis are commonly present, and varying degrees of cyanosis occur, although the latter symptom may vary greatly in different cases. Clubbing of the fingers and toes is uncommon.

On physical examination, clinical evidence of hypertrophy of the right ventricle is apparent, and is determined by the increase in extent of dulness on percussion, to the right of the midsternum, and by demonstration of the impulse produced by the right ventricle being displaced outward and upward, often into the fourth and even into the third, left intercostal space. The pulmonic second tone is frankly accentuated, and frequently is prolonged and reduplicated. A soft, blowing murmur (pulmonary souffle) is heard, usually most plainly to the right of the upper part of the sternum, but at times over the entire precordial area.

Recently Ulrich has called attention to additional diagnostic criteria, which, in addition to the pulmonary souffle, consist of palpable pulsations in the intercostal spaces and the dance of the diaphragm as observed with the fluoroscope. In the latter, the diaphragm is seen to have up and down movements, which occur synchronously with cardiac systole, and which are superimposed on the respiratory movements.

Further roentgenographic evidence consists of abnormal bulging of the right auricle, diminution in the visibility of the pulmonary fields resulting from stasis, and so forth.

The outlook in these cases is uniformly poor owing to the progressive tendency of the lesion and the inevitable failure of the right side of the heart. Life may be prolonged by the patient's acceptance of invalidism. The judicious use of venesection frequently results in temporary improvement but is, of course, a procedure that is limited in its application.

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THE TREATMENT OF PERFORATED DUODENAL ULCER WITH SIMPLE CLOSURE AND JEJUNOSTOMY.*

ARTHUR S. BRINKLEY, M. D.,
Richmond, Va.

In acute perforation of a duodenal ulcer with rapid escape of much duodenal contents into the general peritoneal cavity the patient rapidly goes into a state of shock and any treatment to save life must be quickly applied. The fate of the patient depends much upon the promptness of a diagnosis and the rapidity with which the operation can be performed.

After twenty-four hours operation offers very little hope. Statistics on this point are furnished by McCreery, who reported a series of twenty-five cases of acutely perforated gastric and duodenal ulcers, with a mortality of 6 per cent in those operated within twelve hours, a death rate of 60 per cent in those operated after twelve and before twenty-four hours, and a mortality of 100 per cent in those undergoing surgical treatment after forty-eight hours.

Meyer and Brams' conclusions, based on a study of sixty-two consecutive cases of acute perforation of gastric and duodenal ulcer, showed a mortality of 29 per cent. Thirty-five of their patients were admitted to the hospital in from one to six hours after the onset of symptoms, and of these, seven, or 20 per cent, died. Seventeen patients were admitted in from seven to twelve hours after the onset, and of these, six, or 35.5 per cent, died, while ten were admitted after thirteen or more hours had elapsed, and of these, five, or 50 per cent, died, showing a definite and sharp rise in the mortality rate if operation is delayed for even a few hours. So it would seem operation within the first six hours can save the patient in a large majority of cases provided it be performed rapidly and with a minimum amount of traumatism to the abdominal viscerae involved. Shock is no contra-indication for delaying operation for each hour's delay adds to the mortality.

With the foregoing facts in mind and not being satisfied with the results obtained, either immediate or remote, with the usual standard mode of treatment, namely, closure of ulcer and gastro-enterostomy, with or without drainage, I have employed simple closure of the perforation and jejunostomy with drainage of the cul-de-sac in my last five cases of acute perforated duodenal ulcer which were operated on during the past seventeen months. Of this number there was one death or a mortality rate of 20 per cent, and while the mortality rate, on first impression, would seem very little better than those treated by gastro-enterostomy; however, when one considers the type of patient represented in this fatality, the mortality rate does not appear so high.

I am fully cognizant of the fact that the number of cases treated by this method represents much too small a series from which to draw any definite conclusions; however, I feel that the results obtained warrant a continuation of the treatment. I also realize that very probably a secondary operation for pyloroplasty, pylorectomy or gastro-enterostomy may later become necessary in a number of cases treated by this method, but the condition we are dealing with is a very grave emergency and the least operative interference possible at this time seems to me to be consistent with one's better judgment. The objective in these cases should be tiding the patient over the immediate emergency. Secondary compli-

*Read at a meeting of the Richmond Academy of Medicine, December 13, 1927.

cations can be taken care of at a more propitious time.

Quoting from Farr in an article entitled Perforating Gastric and Duodenal Ulcer, "The argument for gastro-enterostomy, of course, is that it tends to aid in the healing of the ulcer and to obviate a later operation for resulting stenosis. On the other hand, it is well known that by far the greater number of all perforating ulcers tend to heal promptly after closure and that re-perforation, hemorrhage and stenosis are exceptional sequelae. Moreover, it is difficult if not impossible to tell at the time of the operation whether or not stenosis will occur. The mere fact that it is present after the suturing has been done is not conclusive, as it is very improbable that such stenosis will persist. When one considers how difficult, if not impossible, surgeons have found the operation of pyloric occlusion, surely it can hardly be thought a few chromic sutures will bring about this end.

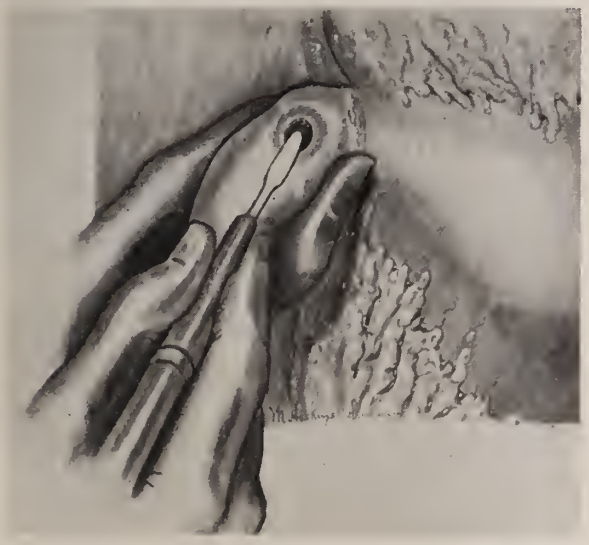

Fig. 1.—Duodenum grasped with thumb and index finger of left hand and crater of ulcer being cauterized to remove any lymph exudate and to freshen the edges of the crater for better approximation when sutures are tied. (Redrawn from Balfour.)

"To my mind, however, the strongest arguments against the added operation are twofold: First, the added immediate mortality will be considerable. Even in the hands of such masters of surgical technic as Peck, Deaver, and the Mayos there is a certain, although low, mortality for gastro-enterostomy even in non-acute cases. Second, the end-results of gastro-enterostomy, even in the best clinics are not 100 per cent good. When one considers that by far the great majority of these acute perforations will always be operated upon by surgeons of much less skill and experience, especially in gastric surgery, it would seem only the part of wisdom to do the simple life-saving operation and await the result, with a later gastro-enterostomy for the small percentage of those requiring it. I feel sure that I voice the feeling of most conservative medical men, including surgeons, in saying that I would not care to have a gastro-enterostomy done on myself if it could be avoided."

TECHNIC

The technic employed was practically the same in each case of this series, and is as follows: A small, low McBurney incision is made for drainage of the cul-de-sac and removal of the appendix. The wound is partially closed around the tube to prevent hernia of intestine in wound. A right paramedian incision about five inches long is made above the umbilicus, the ulcer exposed and the debris in the immediate field sponged out. No clamps or forceps are applied to duodenum or stomach. The technique of Balfour is closely followed; with the thumb and index fingers of left hand grasping the duodenum, the ulcer is gently retracted away from the posterior wall. The crater is then cauterized to remove any plastic exudate which may have formed. Three to four interrupted sutures are then introduced in the long axis of the duodenum. Linen was used in the first three cases, No. 1 chromic in the fourth, and No. 1 tanned in the fifth. Perhaps tanned or chromic gut is better since the danger of secondary ulcer is less. Two to three mattress sutures of No. 1 tanned or chromic gut to infold and reinforce the first row of sutures are inserted to include peritoneal and muscular coats. A piece of omentum from the free edge is then brought up to entirely cover the ulcerated area and fixed in position with five or six interrupted sutures of fine catgut. A loop of jejunum about eight or ten inches from the duodeno-jejunal fossa is selected and rubber covered intestinal clamps applied, and a jejunostomy, described by J. Shelton Horsley, based on the principles of Coffey of forming a valve of the mucosa, is then done in the following manner: An incision is made with a sharp knife about two inches long down to the mucosa and by blunt dissection a trough is formed to receive the catheter. A purse string suture of linen is placed at the distal end of the incision and the mucosa within the

grasp of this suture is punctured. A soft rubber catheter, about number twenty, French, is quickly inserted through the puncture and the purse string tied snugly. The catheter is transfixed with one interrupted suture of linen. The part of the catheter over the incision is then buried with a right angle suture. The clamps are then removed and the wound closed with through and through sutures of silkworm gut bringing the catheter out through the upper angle. A sterile dressing and bandage is applied and the catheter attached to the dressing with a piece of adhesive. A spring clamp is applied to the catheter to prevent escape of jejunal contents.

POST-OPERATIVE TREATMENT

The post-operative treatment consists in elevating the head of the bed twelve inches; 500 c.c. of 5 per cent glucose solution is given intravenously stat.; 5 per cent glucose solution as proctoclysis, flush method; gastric lavage with warm soda solution is given with duodenal tube every four to six hours for the first twenty-four hours, continuing if necessary. Digifoline or digitalone, 1 c.c., hypodermically, every four hours; pantopon, grs. 1/3, hypodermically, every four to six hours, S. O. S. All fluids are withheld by mouth, although there is no objection to moistening the lips with a sponge, and the patient is allowed to chew gum. Feedings every two hours are started through the jejunostomy tube at once. The feedings should be allowed to run into the tube through a funnel by gravity rather than introducing it by means of a syringe. By this method introduction of food too rapidly is avoided. For the first two or three days pre-digested beef, two ounces, in two ounces of warm water, is given at one feeding, and peptonized milk, four ounces, at the next. After this period a more liberal diet is allowed—milk shakes, egg flips, cocoa, gruels, boiled custard, broth, etc., eight to ten ounces at a feeding. Water is given between feedings. The drainage tube is removed on the third to fifth day. Water is allowed by mouth in small quantities on the fifth day, liquids on the eighth to tenth day. The catheter and sutures are removed on the tenth to twelfth day and an ulcer diet started on the fourteenth day. The patient is usually allowed to sit up in bed at the beginning of the third week and discharged from the hospital about the end of the third or beginning of the fourth week.

CASE REPORTS

Case 1.—Perforated duodenal ulcer. Operation three hours after perforation. Recovery. Hospital No. 14-15-21.

C. L. K.; white; male; age, 32; occupation, butcher. Was admitted to Stuart Circle Hospital, June 27, 1926, with the following history: Had been perfectly well with the exception of occasional attacks of indigestion. On the night of admission to the hospital he retired about 11 P. M., feeling perfectly well; awoke about 1 A. M., with severe agonizing pain in epigastric region, rapidly spreading to entire abdomen, accompanied with nausea and vomiting. On admission to hospital patient

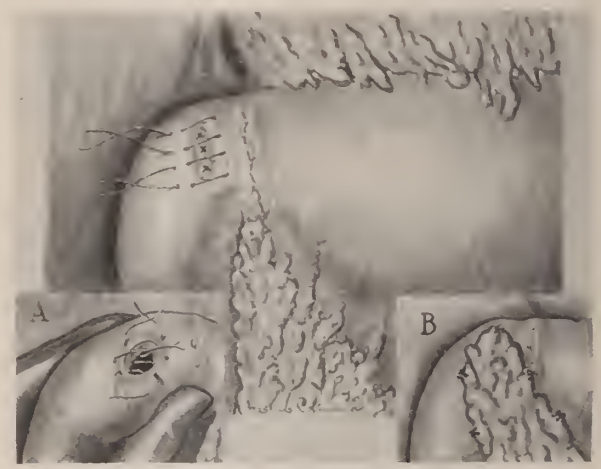

Fig. 2.—Insert A—Interrupted sutures introduced through all coats of duodenum and ready to tie. Main drawing—The interrupted sutures have been tied. The mattress sutures have been inserted and are ready to tie. Insert B—Completed operation; Omentum implanted over site of closure. (Redrawn from Balfour.)

was still having severe abdominal pain and there was board-like rigidity of the abdomen, although he had had morphine, grs. ¼, one hour before. Blood count 15,800; polys 86. A diagnosis of, first, pancreatitis; second, perforated duodenal ulcer; third, fulminating post-cecal appendicitis, was made. Under general anesthesia a low McBurney incision was made. On opening the peritoneal cavity a large quantity of duodenal contents was liberated. The appendix showed some adhesions and was markedly congested. It was quickly removed and a soft rubber tube inserted in the cul-de-sac. A right para-median incision was then made above the umbilicus and a perforated ulcer of the duodenum exposed about ¼ inch in diameter. The technic previously described was employed. He left the table in good shape, recovery was un-

eventful, and he left the hospital in good condition twenty-three days after operation.

Case 2.—Perforated duodenal ulcer. Operation twenty-five hours after perforation. Recovery. Hospital No. 21-58-3.

A. W. S.; white; male; age, 54; farmer. Was admitted to Retreat Hospital May 19, 1927, with the following history: He had been in usual good health with the exception of occasional attacks of indigestion and heartburn until four days ago when he began to have a gnawing pain in the epigastrium accompanied with nausea. About twenty-four hours before admission to hospital was ploughing; had severe griping pain in pit of stomach, felt

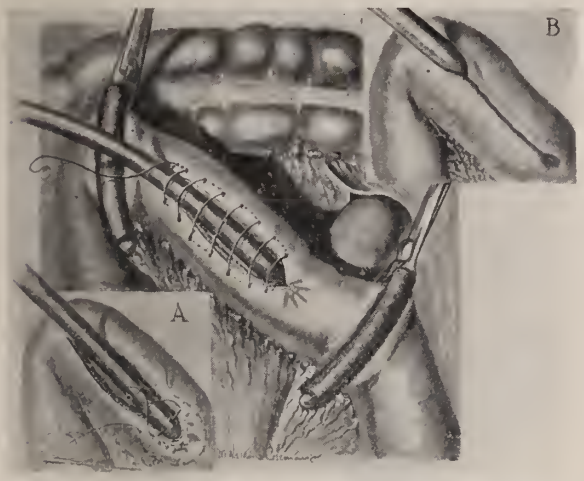

Fig. 3.—Insert A—The incision is made through the peritoneal and muscular coats down to the submucosa of the jejunum, at the distal end of the incision a purse-string suture is inserted and a soft rubber catheter introduced into bowel through a puncture in the mucosa within the grasp of the purse-string suture, the purse-string suture being tied snugly about the catheter. One interrupted suture to fix catheter in position, another partial purse-string suture to invert previous one and to cover knots of both purse-string and interrupted sutures. Main drawing—The partial purse-string suture is tied, the short end cut and the suture continued as a right-angle suture to bury that part of the catheter lying in the incision. Insert B—The jejunostomy has been completed. Usually there is no leaking of jejunal contents when the catheter is withdrawn, due to the valve formation of the mucosa. (Redrawn from Horsley.)

weak and fainty, and vomited for first time. Went to bed, but felt better in little while. Had some pain during the night and worse next morning. Sent for doctor who advised going to hospital at once. On admission to hospital the abdomen was board-like in rigidity; patient had anxious expression on face, and showed all signs of general peritonitis. Blood count 12,000; polys 90. A diagnosis of perforated duodenal ulcer was made. Under general anesthesia a low McBurney incision was made. On opening the peritoneal cavity a quantity of duodenal contents with much peritoneal fluid was liberated. The appendix was congested and rather tense. It was removed and a soft rubber tube inserted in the cul-de-sac.

A right para-median incision was made above the umbilicus and a perforated ulcer of the duodenum was exposed. The crater was about 1/3 inch in diameter. There was a large quantity of lymph exudate in the region of the ulcer. The usual technic was employed. The patient's condition was poor on leaving the table and rather critical for the first five days. After that the recovery was uneventful and he left the hospital twenty-four days after operation.

Case 3.—Perforated duodenal ulcer. Operation twelve hours after perforation. Recovery. Hospital No. 21654.

P. P.; colored; male; age, 18; farmer. Was admitted to Retreat Hospital May 31, 1927, with the following history: Had been in usual good health until one week ago. Began to have pain in abdomen to the right of and in the region of the umbilicus. Took salts and had several bowel movements but gave no relief. Kept up and about his work. Early in the morning on day of admission to hospital after he had eaten breakfast was seized with severe pain in lower right abdomen, was nauseated, but has not vomited during illness. On admission to hospital, patient appeared acutely ill with symptoms of general peritonitis. Board-like rigidity of abdomen was present with maximum point of tenderness at McBurney's point. Blood count 17,000; polys 88. A diagnosis of gangrenous appendicitis, ruptured and general peritonitis was made. Under general anesthesia a low McBurney incision was made, and on opening the peritoneal cavity a large quantity of duodenal contents with particles of undigested food was liberated. The appendix was practically negative with the exception of secondary congestion. It was removed and a soft rubber tube inserted in the cul-de-sac. A right para-median incision above the umbilicus was made and a perforated ulcer of the duodenum was exposed about ½ inch in diameter. The usual technic was employed. The patient left the table in fair shape. Recovery was uneventful with the exception of vomiting his food a few times when soft diet was started on the tenth day. He left the hospital in good condition on the twenty-second day after operation.

Case 4.—Perforated duodenal ulcer. Operation six hours after perforation. Recovery. Hospital No. 12.

R. T. K.; white; male; age, 33; street sweeper. Was admitted to Memorial Hospital August 10, 1927, with the following history: Had had vague abdominal pain for past year, but was able to work until the middle of June, when he quit work for six weeks and took some treatment. Returned to work the latter part of July but still had vague abdominal pain practically all the time. Food and soda gave some relief at times but not always. Late in afternoon on day of admission to hospital was seized with severe cramp-like pain in right upper abdomen, accompanied with nausea, vomiting, and thirst; drank large amount of water, but pain grew worse and seemed to spread over abdomen; removed to hospital later in night. On admission to hospital the patient appeared acutely ill and showed evidence of a moderate amount of shock and signs of general peritonitis. Board-like rigidity of abdomen was present; maximum point of pain and tenderness in right upper quadrant. Blood count 17,200; polys 82. A diagnosis of perforated duodenal ulcer was made. Under general anesthesia a low McBurney incision was made, and on opening the peritoneal cavity a large quantity of water was liberated, apparently two or three pints mixed with duodenal contents. The appendix was of the chronic obliterative type. It was removed and a soft rubber tube inserted in the cul-de-sac. A right para-median incision was made above the umbilicus and a perforated duodenal ulcer was exposed about 1/3 inch in diameter. There was a good deal of induration around the perforation. The usual technic was employed. He left the table in fair shape and recovery was uneventful. He was discharged from the hospital in good condition twenty-two days after operation.

Case 5.—Perforated duodenal ulcer. Operation seven hours after perforation. Death. Hospital No. 152243.

C. M. S.; white; male, age, 55; foreman steel construction. Was admitted to Stuart Circle Hospital August 13, 1927, with the following history: Had been a rather heavy drinker all life, and had not been well for several weeks. Had been under treatment for neuritis and heart trouble; had suffered with indigestion and heartburn at times but not enough to give any unusual amount of discomfort. Early in morning on day of admission to hospital began to have severe cramp-like pain in upper abdomen, which felt like it was cutting his breath off. It grew worse and seemed to spread over the the entire abdomen accompanied with marked nausea and some vomiting. On admission to hospital, the patient appeared extremely ill and showed signs of marked shock; pulse rate rapid and heart action poor. He was given active stimulation before operation. Board-like rigidity of the abdomen was present, with maximum point of pain and tenderness in upper right quadrant. Blood count 18,000; polys 90. A diagnosis of perforated duodenal ulcer with general peritonitis was made. Under general anesthesia a low McBurney incision was rapidly made. On opening the peritoneal cavity a large quantity of duodenal contents with undigested food was liberated. The appendix was found practically normal and was not removed. A soft rubber tube was inserted in the cul-de-sac. A right para-median incision above the umbilicus was made and a perforated ulcer of the duodenum was exposed about 1/3 inch in diameter. The usual technic was employed. The patient left the table in desperate condition and still showed signs of marked shock twenty-four hours later. He seemed somewhat improved on the third day, but expression and heart action still bad and marked amount of distention. The distention increased and an enteros-

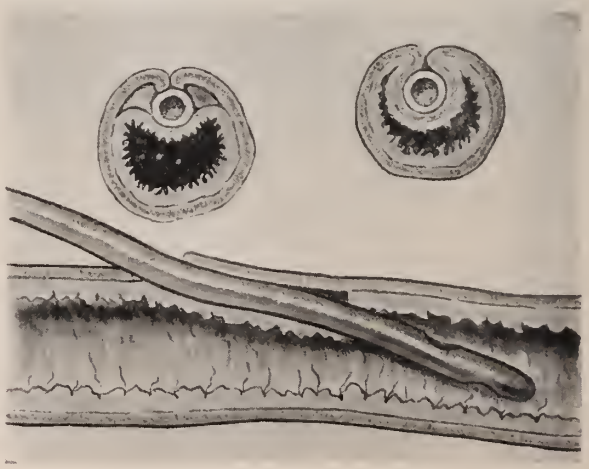

Fig. 4.—Shows cross section of jejunostomy based on the principle of Coffey. Note only a small part of the peritoneal coat comes in contact with the tube. (b)—Shows cross section of jejunostomy by the Witzel method, the one most commonly used, where the tube is completely surrounded by the peritoneal coat, causing a marked reduction in the lumen of the bowel as well as the formation of a rigid canal which may result in a permanent fistula. (c)—Shows sagittal section of jejunostomy based on the Coffey principle. Note the valve-like formation of the mucous membrane. (Redrawn from Horsley.)

tomy was done on the morning of the seventh day but gave no relief, and he died late that afternoon.

CONCLUSIONS

1. Perforation of a duodenal ulcer is one of the gravest emergencies in abdominal surgery.

2. Statistics show that the mortality rate is in direct ratio to the time allowed to elapse prior to operation. The lowest rate is 6 per cent within twelve hours, 60 per cent after twelve and before twenty-four hours, and 100 per cent after forty-eight hours.

3. The operative procedure should be simple, quick, and accompanied by as little manipulation of intra-abdominal contents as possible.

4. There is a certain mortality rate for gastro-enterostomy in non-acute cases. Naturally there should be a sharp rise in the rate when employed for acute perforated duodenal ulcer.

5. It would seem that simple closure and jejunostomy was drainage of the cul-de-sac is the safest operative procedure.

6. A secondary operation for pyloroplasty, pylorectomy or gastro-enterostomy may be necessary in a small percentage of cases.

7. I feel that the results obtained with simple closure of the perforation and jejunostomy, warrant a continuation of the treatment, although the number of cases treated is small.

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Medical Arts Building.

ABSTRACT OF DISCUSSION

DR. J. SHELTON HORSLEY: Saving four out of five patients with perforated duodenal ulcers is a very good record, taking them as successive cases as they come. Too often cases are neglected, which makes it difficult for the surgeon to obtain successful results.

I agree with Dr. Brinkley that usually a posterior gastro-enterostomy should not be done in these cases, not only because of the unfavorable results of posterior gastro-enterostomy when the pylorus is open, but because it tends to spread infectious material which might be limited to the neighborhood of the duodenum, to the lesser peritoneal cavity and to the tissues around the root of the mesocolon. I feel, however, that in many cases of perforation of duodenal ulcer in which the ulcer is limited and the perforation as usual occurred in the first inch of the duodenum, the physiologic pyloroplasty which I have been doing for a good many years may be adopted with satisfactory results. This consists of excising the ulcer and extending the incision through the pylorus and the pyloric end of the stomach for about one and a half inches. The wound is sutured, taking care not to put any sutures in the mucosa of the pyloric portion of the stomach, and seeing that the incision in the stomach was at least twice as long as the incision in the duodenum. In this way not only is the ulcer excised but potential obstruction is avoided and the spasm from the pyloric canal and the pyloric sphincter is avoided by dividing these structures. In other words, physiologic rest is given, much as in fissure in ano. The patient should have gastric lavage every six to eight hours for several days afterward. If this were done it would seem unnecessary to do a jejunostomy.

I have done a total of seventy-three pyloroplasties after this method. In the first twelve there were three deaths, which have been discussed elsewhere. Two of these deaths at least were due to errors in judgment and technical errors which I think should not have occurred and would not occur now. The other was also an error in estimating the function of the patient's kidneys. Since these first twelve cases, I have done sixty-one consecutive pyloroplasties to the present date without a death. Of this number only one was for acute perforation.

As for the technic for enterostomy as shown by Dr. Brinkley, I think it is very satisfactory. This is the technic which I have worked out. It is based on the principle of Coffey, and was published in Horsley's "Operative Surgery," in 1921, and in other publications. The oblique enterostomy might be done later on if it appeared necessary, but the attaching of the upper part of the jejunum to the abdominal wall unless there is distinct indication for doing so might result in subsequent adhesions and complications.

DR. BRINKLEY: I want to thank Dr. Horsley very much for discussing my paper. As stated before, the number of cases treated by this method is entirely too small to draw any definite conclusions. Dr. Horsley stated that he felt that in many cases of perforation his pyloroplasty

might be adopted with satisfactory results. I think Dr. Horsley's pyloroplasty is an admirable operation in certain types of pathology in or near the pylorus and I have employed it many times, but I do not believe this or any other type of pyloroplasty is ever indicated in the acute perforating type of duodenal ulcer. In the majority of cases nature has been kind enough to throw a barrier around the perforating crater of the ulcer and it seems to me that any extensive surgery in this area is absolutely contra-indicated. It would seem that Dr. Horsley has found this to be the case since out of a series of seventy-three pyloroplasties, he has only done one for acute perforation. As for the complications which might arise from the jejunostomy high up in the jejunum, I feel that the immediate benefit to be derived from this method of procedure, reference to which was discussed in the paper, will far over-shadow any remote complication which might occur.

AMAUROTIC FAMILY IDIOCY—THREE CASE REPORTS.

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D. L. HARRELL, JR., M. D.,
and
H. L. RILEY, JR., M. D.
Colony, Va.

According to Wechsler, amaurotic family idiocy is a slowly progressive, often familial, probably congenital, fatal disease occurring in infants. It is characterized by gradual impairment of vision, leading to complete blindness; by progressive mental impairment, terminating in idiocy; and by ultimate paralysis of the body and limbs.

The *cause* is unknown. It is assumed, and probably correctly, to be a disease of infants whose nervous system is congenitally defective. In many, but not all cases, consanguinity seems to play a definite role. The disease seems to be more common in Polish-Jews, but is not rare in Hebrews of other nations, and may occur in non-Jews. Two or more children in one family are not infrequently affected, but the same parents may have other healthy children. Schaffer is of the opinion that the disease shows definite germ layer and special system and segment selectivity.

The *juvenile form* of amaurotic family idiocy described by Spielmeyer bears close resemblance to the infantile type. It occurs in older children, between the ages of six and twelve years. It also terminates in blindness and death usually within two years from the date of onset, but there are no changes in the macula lutea, though there is optic atrophy.

Pathology.—This disease involves only tissues derived from ectoderm, viz., nervous tissue. Winkelman's description of pathology refers to the brain as being larger than normal, and extremely hard, as if it had been hardened in formaldehyde for weeks. There was a great variation in the size of the convolutions; a definite thickening of pia-arachnoid resulting from edema, plus fibroblastic proliferations in meshes of which were occasional macrophages but no inflammatory elements. The cortex showed involvement of every ganglion cell. There was a peculiar swelling of cell body so that it resembled a balloon. There was disappearance of normal Nissl's bodies in cells with later accumulations, around nucleus, of dust-like particles representing remains of stainable substance. The rest of the cell body showed meshwork in spaces of which lipoid substance could be demonstrated. The nucleus was gradually displaced toward periphery; it showed little change in itself. Neurofibrilla were present around margins of the cells. Phagocytic cells were abundant in intercellular tissues, as were proliferations of fibers from astrocytes. The blood vessels appeared to have undergone little change. This type of pathology was found throughout the ganglion cells of entire central nervous system.

Symptoms.—Usually patients are born of healthy parents and are themselves healthy at first. In the infantile type they do well and develop normally until up to about six months of age (up until six or seven years of age in the *juvenile form*); then it

is noticed that the baby is not doing well. The baby takes less food and stops gaining. Both mental and physical development is interrupted; retrogression ensues. He who could hold up his head, or sit alone, soon loses ability to do these things, and becomes helpless. Idiocy develops. The muscles of the extremities and trunk become useless, spastic or flaccid. The reflexes may be increased, diminished, or absent. Vision becomes impaired, and blindness finally ensues. Ophthalmoscopic examination reveals a characteristic cherry-red spot in the region of the macula in the infantile form and, later, optic atrophy. Nystagmus and strabismus may occur and hyperacusis is common. Marked wasting away takes place and finally death occurs.

Diagnosis.—This depends upon the patient's history, on the finding of the eye grounds, the patient's appearance, and more especially his gait. The main criterion between infantile and juvenile family amaurotic idiocy is the difference in age at the onset of the disease and the fact that the infantile form, in practically every case that has been reported, has occurred in Hebrews, and more especially Polish-Hebrews, whereas the juvenile type shows no racial preference and the patient is generally six years of age or older at time of the onset of the disease, the child having apparently been normal up to the time of the onset of the disease.

Prognosis.—Prognosis in the infantile type is, of course, always fatal. In the juvenile type it is generally fatal within two years; however, some cases may live a good many years longer than this. In the three cases we are reporting, the disease has been in progress for approximately six years, four years, and several months, respectively.

Treatment.—There is no known cure for these cases. The only thing that can be done is to treat the symptoms until the child finally dies.

A review of the literature on this condition shows there have been several hundred cases reported. Most of these cases have been of the infantile type, there being relatively few of the juvenile type. For this reason we are reporting these three cases.

On October 26, 1934, two children from one family were admitted to this institution. A boy, Willard D., aged 13 years; a girl, Alma D., aged 11 years. On the routine examination a tentative diagnosis of amaurotic family idiocy was made. After a search through the literature, a definite diagnosis of amaurotic family idiocy of the juvenile type was made. Since that time we have had the privilege of seeing a third member of this family, a boy, aged about 7 years, and the same diagnosis was made in his case.

Family History: Patients forbears are gentiles and there is no Jewish blood in the family as far as they know. The patients' mother and father are not related; they state that with the exception of one uncle, who was insane, and who was confined in the Western State Hospital, there has been no insanity, feeble-mindedness, epilepsy or alcoholism in the family. From our observation, we are forced to conclude that the mother and father are unquestionably feeble-minded.

Case 1.—History: She is said to have been a healthy and mentally normal child until she was 7 or 8 years of age, at which time she began to go blind and began to deteriorate rapidly mentally. Two years later she developed epilepsy. She is now 11 years, 8 months, of age.

Psychological: The patient now has a mental age of approximately two years.

Physical Examination: The patient executes such commands as "stick tongue out; touch eye, nose, etc." The patient mumbled continually, but only a few words could be understood. Patient was very uncooperative; kept extremities in almost constant motion. The patient is unable to walk without assistance; she walks with a shuffling, cautious gait, taking very short steps and keeping her legs widespread; she does not flex her legs at the knee while walking. She will not stand alone without assistance, but either falls or sits down.

Vision: The patient is blind. She probably cannot distinguish between light and dark. Fundi: The discs are pearly white with a dark margin. The entire retina has an abnormally dull appearance suggestive of minute deposits of pigment, varying in size. No cherry-red spot was seen. There is a variable squint, probably due to blindness. There is no facial paralysis. The tongue protrudes in the midline. There was a suggestive hyperacusis. There is slight muscular atrophy in the legs, probably due to lack of use. The legs are held spastic, but can be flexed to full extent.

The patient was very much upset and very irritable for some time after her admission, but she is now getting along much better. The patient has had numerous *petit mal* epileptic seizures, but none

of the *grand mal* type. She has gained considerable weight since her admission to the Colony.

REFLEXES

	Right	*Left*
Biceps	N	N
Triceps	N	N
Abdominals	N	N
Patellars	+++	+++
Achilles	N	N
Ankle Clonus	++	++
Oppenheim	++	++
Babinski	++	++
Chadwick	—	—

Legend: N=Normal.
+=Degree of Hyperactivity.
—=Absence of Reflex.

Diagnosis: Amaurotic family idiocy accompanied by idiopathic epilepsy.

Case 2.—Willard D., 13 years and 7 months of age. *History:* He is said to have been a healthy and normal child until he was about six years of age, at which time he began to lose his sight and mental deterioration began. He developed epilepsy when he was six.

Psychological: The patient's mental age is now approximately one and one-half years.

Physical Examination: The patient is very poorly developed. During examination he was very uncooperative; he kept his arms in almost continual motion. He mumbled a great deal to himself, but made no intelligible sounds. He is unable to walk at all. A totally satisfactory physical examination could not be made due to the patient's very poor mentality. Apparently hyperacusis is present. Vision: The patient is totally blind. There appears to be profuse pigmentation in the retina of both eyes. No cherry-red spot was seen in the macula. Marked ptosis present. The legs are apparently totally paralyzed; the patient makes no effort to use them. There is extensive muscular atrophy in both arms and legs.

REFLEXES

	Right	*Left*
Biceps	++	++
Triceps	++	++
Abdominal	++	++
Patellars	+++	+++
Achilles	N	N
Ankle Clonus	—	—
Oppenheim	N	N
Babinski	N	N
Chadwick	—	—

The patient, as a result of numerous *grand mal* epileptic seizures, deteriorated rapidly both physically and mentally. He was removed from the Colony, against the advice of the staff, on December 20, 1934.

Diagnosis: Amaurotic family idiocy—with idiopathic epilepsy.

Case 3.—Frank D., about 7 years of age. *History:* According to his parents, he developed in normal fashion until he was six years of age. Then he became gradually blind and underwent mental deterioration. He is probably to be regarded as having been an imbecile for about twelve months.

We were unable to secure a physical examination on this boy, although he was seen several times with his parents at the Colony while visiting his brother and sister. He appeared to be in good physical health, about as well developed physically as the average boy of his age. He was extremely active and appeared to be very happy. In running about, while playing, he frequently bumped into objects, as the result of impairment of vision. When he attempted to pick up anything his loss of vision was obvious. Unfortunately, we had no opportunity to examine his eye-grounds.

Since the above was written we have been informed that Willard D. died at his home, while on parole from the institution, on January 27, 1935.

MULTIPLE BLADDER STONES WITH UNUSUAL SYMPTOMS—CASE REPORT.*

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In presenting this case I shall describe briefly the history and management of the case, and then draw a few conclusions, all of which I hope will prove of some interest to the general practitioner and the diagnostician as well as the urologist.

Mr. J. W. S., white, male, laundryman, aged 47, first consulted me on March 10, 1930. His chief complaint was of a sticking pain in the region of

*Read at a clinical meeting of the Richmond Academy of Medicine.

his rectum and he volunteered the information that he had prostate gland trouble. He stated that this pain had annoyed him for the past five years and was growing gradually worse. There was no frequency or urgency of urination, no dysuria and no nocturia, but his urinary stream was somewhat sluggish. There were no other symptoms referable to rectal pathology. He stated that when he was first taken with this pain five years previously there was associated with it some burning urination which cleared up under medication prescribed by his family physician. After tolerating this rectal discomfort for several months he went to a surgeon who examined his rectum and prescribed ointment which effected no relief. Failing ultimately to experience benefit from this surgeon, he next consulted a proctologist who told him there was nothing wrong with his rectum, and referred him to a genito-urinary specialist for investigation of his prostrate gland as a possible cause of his trouble.

After receiving prostatic massage over a period of a year without benefit he presented himself at my office with the plea that I cure his prostate gland and relieve his pain.

Examination at this time revealed a small nodular prostate from which a moderately purulent secretion was expressed. He voided a large quantity of urine which was negative on examination except for alkalinity. It was evident that the patient did have a chronic non-specific prostatitis; therefore, I set to work to treat this condition with diathermy, non-specific protein therapy and massage. As he was no better after two weeks of this, I next cauterized several small areas of granulations in his deep urethra through a urethroscope. This was the only pathology found in his posterior urethra and the cauterization had no effect on his rectal pain.

Since, as a result of my efforts, the patient had grown somewhat worse instead of better, I questioned him more carefully regarding his pain and elicited the fact that he suffered a great deal more while walking than while at rest, and that when lying down he was comfortable. He stated that if something wasn't done he would have to quit his job which kept him constantly on his feet. Having obtained this information, the idea occurred to me that probably my patient had bladder or prostatic calculi, and I had him X-rayed immediately. These suspicions were confirmed by the flat plate which showed four large, spheroidal calculi in the bladder.

No sales talk was necessary to persuade the patient to have these stones removed. On admission to the hospital, a test for residual urine showed 6 ozs. His laboratory tests were normal except for an N.P.N. of 42 mgs. Suprapubic cystotomy was carried out and four hard spheriodal, smooth, white stones the size of large limes were removed. The bladder was atonic and sacculated. There was no protusion of the prostate into the bladder but there appeared to be a definite median bar formation at the inferior portion of the bladder neck. It was decided to remove this obstruction with a punch before the patient left the hospital. Following the cystotomy, convalescence was good and the patient left the hospital in two weeks, preferring to return for the punch operation.

At the expiration of two more weeks he was readmitted for the removal of his bar obstruction. Upon looking into the bladder several small white irregular concretions which had formed in the short space of four weeks were seen. These were removed with a cystoscopic ronguer and then the punch operation was performed, using the Day prostatic punch. Four average size pieces of tissue were removed from the bar. The bleeding was readily controlled and the patient returned to bed after tying in an indwelling catheter. There were no immediate post-operative complications and the patient, voiding a forcible stream, left the hospital on the third day following the operation. Things went well until the tenth post-operative day when he passed a small stone, which was evidently overlooked prior to the punch operation and which then began to cause profuse bleeding into his bladder. He was hospitalized again and the bladder freed of clots by aspiration and lavage through a large catheter which was fixed in the urethra. Feeling that all was well, I left town over night but upon my return the next day I found hemorrhage had recurred, the bladder was badly distended, and the patient was in shock. All efforts to empty the bladder of clots through the urethra were futile; hence, suprapubic cystotomy was resorted to, the bladder emptied of a large amount of clotted blood and a tube stitched in for drainage. The bleeding point had stopped when the bladder was opened and there was no subsequent hemorrhage. In seventeen days the patient went home voiding practically all of his urine.

As there were no other complications he improved

rapidly. He was kept on acidifying agents and bladder irrigations until his urine was clear, and in a month he returned to his work in comfort.

In response to my request, he came to my office on August 11, 1933—three and a half years after his first visit. He stated he had had no return of his pain and that he had felt perfectly well. There was a residuum of only one-half ounce. His urinary stream was of good force and his urine was acid and showed only an occasional pus cell.

X-ray photograph shows four large bladder calculi.

It seems to me that certain definite lessons can be learned from the facts in this case: First, it demonstrates that extensive bladder calculosis can occur without the existence of any of the symptoms such as frequency, urgency, tenesmus, pus and blood in the urine, etc., which we usually attribute to this condition. Second, it emphasizes the importance of a careful history and a thorough and complete examination. Third, it shows how we can be misled by directing all of our energies toward the eradication of one pathological process which we have discovered while there is co-existing pathology which is actually producing the symptoms. Carelessness and incompleteness in the study of a case are responsible for many more of our mistakes than is ignorance. This lack of careful, alert and patient consideration of an individual's ills often leads to a lack of confidence in us as physicians and causes the patient to stray into unscientific paths, and to seek solace in irregular cults. It behooves us to give our patients the benefit of more study and more consultations in order to speed up the making of accurate diagnoses.

Just a word regarding the management of bladder calculi. Whether we adhere to the old theory of the formation of urinary tract calculi that some adventitious substance is necessary as a nucleus, or whether we accept some of the newer views such as the specific streptococcus theory of Rosenow and Meisser or the Vitamin A deficiency theory, I believe it is true that all primary bladder stones result either from obstruction or chronic infection or from both of these factors existing together. Therefore, in order to effect a cure, obstructive lesions such as bladder neck blockage and stricture if they exist must be corrected. If chronic cystitis is the precursor of stone it must be combated with due consideration of upper urinary tract infection and remote focal infection, particularly of the teeth, as a cause of the cystitis.

407 West Grace Street.

ANAL FISSURE AND ITS NON-OPERATIVE TREATMENT.

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INTRODUCTION

Anal fissure, though small in calibre, is very large in the measure of pain and suffering which it inflicts, and it may be said that it is almost the most disturbing of all the common pathological conditions which attack the rectum and anus, and for which the patient is forced to seek medical advice.

DEFINITION

An anal fissure is a split in the wall of the anal canal, characterized by acute pain and paroxysmal contractions of the sphincter and levator ani muscles during and after each bowel movement.

At the outer end of the fissure the mucous membrane or the mucocutaneous border is frequently

edematous and hypertrophied, resembling a skin tab. This is called a "sentinel pile."

Many authorities, Buie,Rankin and Drueck among them, term anal fissure an infectious condition of the anus. It seems to me that this term is based largely upon the end-result and should be applied only to the final pathology. Particularly so, since we know that the lesion is primarily only a mere split in the mucosa, or mucosa and musculature, of the anus, and the symptoms at that stage do not differ very much from those which the patient experiences in the final, infectious stage.

ETIOLOGY

The causes of anal fissure are: *traumatism,* either within or from without; *inflammatory* conditions in the rectum and anus, such as abscess, proctitis, papillitis, cryptitis, combined hemorrhoids, etc.; constitutional diseases, such as tuberculosis and lues; *foreign bodies* in the anal canal, and *constipation.* In regard to the last cause, there is a difference of opinion. Some place constipation as the paramount one. Others claim that it is secondary to fissure. My opinion is that both parties are right. A constipated bowel movement may produce a fissure, but, on the other hand, a fissure will cause constipation, because the patient has a fear of defecation and a resulting spasticity of the sphincters.

SEATS OF PREDILECTION

The seats of predilection for fissures are the commissures, especially the posterior one. This can be explained by the fact that the posterior portions of the rectum and anus, particularly on account of attachment to the sacrum and coccyx, exert more force and resistance than does the anterior one. In multiparous women, because of the thinness of the recto-vaginal septum, the anterior commissure is often the seat of trouble.

Fissures are, as a rule, single, but they may be multiple.

Females are more subject to this pathological condition than males. Unmarried women, in the opinion of some authorities, are more prone to it than married ones. Children, according to Yeomans, are sufferers in a fair percentage of cases.

CLASSIFICATION

Anal fissure is classified by most proctologists, according to the stage it is in, as (a) acute, (b) indurated, and (c) ulcerated. I should like to suggest a secondary classification, which may serve as a key to enable the physician at large and the younger proctologists as a group to institute the proper treatment in the proper stage. My suggested classification would be (a) acute, or obedient; (b) indurated, or angry; (c) ulcerated, or stubborn.

Perhaps the last paragraph demands some explanation. As physicians we know that, when a patient presents himself with an anal fissure, we, immediately, in our mind, begin to group or classify the pathology so as to be in a position to treat it correctly and to advise the patient properly. With the proposed classification in mind, all that one has to do is to determine the stage, and the treatment will then naturally follow. For example, the acute fissure is obedient. This means that it will take treatment at any time, will respond to it, and be satisfied. The indurated one is angry. It is unwilling to be disturbed, and resents treatment, but, after some coaxing, some persuading (preparation in medical terms), the angry mood will gradually subside, and it will then take the medication satisfactorily. The ulcerated fissure is stubborn. You cannot "reason" with it. It has to be dealt with by force. What that force comprises will be mentioned later.

SYMPTOMS

The symptoms of anal fissure are (a) pain, varying from a mere soreness or a burning feeling to sharp, lanciating stabs, lasting from minutes to long hours after defecation; (b) bleeding, from slight stains to such a considerable amount as to actually frighten the patient, and (c) fear of defecation. If the fissure is situated between the sphincters, the patient may experience a sharp pain in the rectum, radiating up to the sacrum.

The pain of anal fissure is caused by the stretching of the wound during the process of defecation. Nature, in her efforts to protect the tender spot, brings about spasmodic contractions of the sphincter muscles, which are supplied with numerous branches of the pudic nerve. With each effort on the patient's part to expel fecal matter, the sphincter muscles respond with contractions, compressing the highly sensitive nerve filaments exposed in the base or edges of the fissure. Thus, a vicious circle is established.

DIAGNOSIS

Anal fissure needs to be differentiated from proc-

titis, abscess, cryptitis, combined hemorrhoids, etc. A carefully taken history plus a good exposure of the anal field will establish the diagnosis.

TREATMENT

The treatment of anal fissure medicinally is as old as fissure itself. Drugs and remedies such as silver nitrate, copper sulphate, alum, any form of caustics, balsam of Peru, ichthyol, scarlet red, tobacco leaves, and even spider webbings—not to mention that mysterious mode of treatment where "Medicine Men" pray to the good spirits to conquer the evil ones—were, and still are, used by the profession. Nevertheless, none can conscientiously claim a cure, unless the fissure is superficial, in which case it may be considered as a simple abrasion. And, as a matter of fact, a fissure in this state can be cured by mere sitz-baths and bowel lubrication.

The pioneer of the non-operative, curative treatment of anal fissure, and the one to whom credit is due according to the literature, is Alvis Graham, of Indianapolis. In 1924, it occurred to him to treat fissures with a 5 per cent solution of quinine and urea hydrochloride, and in the same year he reported thirty cases with twenty-seven cures. In 1926, before the American Proctologic Society, he reported 128 cases with 93 per cent cures.

Yeomans, in his splendid book on proctology, praises this mode of treatment, to which he himself adheres, and takes the view that it is possible to effect a cure in 77 per cent of cases, mostly of an acute nature.

The *technique* used is as follows: The patient assumes the lateral position, properly exposed and the field properly lighted. The area is sterilized either with 5 per cent mercurochrome, tincture of iodine, or alcohol. A fresh solution of the quinine and urea hydrochloride is placed in an ordinary syringe. The needle, which should be fine, punctures the skin just below the lower border of the fissure, and, as it is slowly advanced underneath the fissure, a total of 1 c.c. of the solution is injected.

It must be remembered that the injection is very painful and, therefore, has to be done quickly in order not to discourage the patient from further visits, because, if one injection is not effective, the treatment has to be repeated.

This treatment somehow has not aroused the enthusiasm of the profession at large. In fact, it was dormant during the period between 1926 and 1929. In this country it was used only by a few men—Graham, Yeomans and Drueck. In Europe it was not used at all.

In 1929, Bensaude, Cain and Lievre, in Paris, began using it in the same percentage and with the same technique, as Graham; and in the beginning of 1930, before the Medical Society in Paris, they reported twenty-seven cases with nineteen cures and marked improvement in the rest. In the majority of cases they used one, and in some instances two or three injections.

In the same year Makhlin, of Berlin, and Zweig, of Vienna, adopted the same method of treatment in their clinics. After nine months, Makhlin, in *Die Klinische Medizin,* and Zweig, in *Die Wiener Klinische Wochenschrift,* came out with their results. Makhlin reported sixty cases with forty-eight cures, and Zweig cited sixty-eight cases with forty-seven cures.

Rolfe, of Boston, has on record about fifty cases, which he treated with only 2 minim doses, with very satisfactory results.

I have used quinine and urea in the Beth-Israel and in the Massachusetts General Hospitals. The percentage employed in both clinics was one-half of one per cent, Franken's method. In the Beth-Israel, we had fifty cases, with 30 per cent cures, and at the Massachusetts General, as my personal figures show, we had thirty-six cases, with 21 per cent cures. Perhaps the mildness of the solution was to blame for not having a larger percentage of good results.

While our French, German and Austrian colleagues were enthusiastic over the quinine and urea treatment, Gabriel, of London, came forward with a modified Benacol preparation which he christened "A. B. A." The formula is: Anesthesin 3 per cent, benzyl alcohol 5 per cent, ether 10 per cent, and sweet almond oil q. s., and in 1929-1930 he enthusiastically announced it in two detailed articles, in the *British Medical Journal,* as a *superior, non-operative treatment* of anal fissure.

The technique is practically the same as in the quinine and urea method. The only difference is that, whereas the quinine and urea is used in a 1 c.c. dose, A. B. A. is used in 3 or 5 c.c., 1 or 2 c.c. of which is injected in the muscle on each side of the fissure, and 1 c.c. underneath the fissure

proper. In order not to cause sloughing, the injection should be made so deeply that no superficial swelling is noticeable afterwards.

I have used this solution since 1929 with gratifying results. The only disadvantage is that it causes considerable pain, which lasts for about two or three hours after being injected—quite a discouraging thing for the patient till the good result is accomplished.

There has recently been offered a new preparation, which I believe will replace and transcend all previous ones. It is put out by the Ciba Co., and is called nupercain, phenol and oil. It really is nothing but a modification of Gabriel's formula, but claims superiority over its "parent," because it does not cause any suffering, not even discomfort, after it is injected. The twenty-five cases in the clinic at the Beth-Israel Hospital and the ten cases in my private practice support its claim.

The anesthesia is fast, complete, and lasting for weeks and even months. The following two cases may serve as an illustration:

Case 1.—A white female, aged 28, housewife, was referred to me by her family physician. Her C. C. was: Sharp, cutting pain in the anus during a bowel movement and terrible discomfort afterwards for hours and hours. She had a feeling of horror when the time came to move the bowels, because she knew what suffering it meant to her. On some occasions she noticed blood in the stool.

Inspection showed a small sentinel pile. A digital examination caused her so much pain that she almost went into hysterics. The diagnosis of anal fissure was obvious. I injected her with 5 c.c. of the nupercain, phenol and oil, as described above. A few minutes later I introduced a large size anoscope freely without causing her to suffer the least. All her symptoms have disappeared since. A single injection cured her. I saw her again six months later, just for a check up. The fissure was healed and the sentinel pile subsided, and she did not have enough words of praise and blessing.

Case 2.—A white male, aged 35, chiropodist. He came in to consult me on account of sharp pain during defecation and lasting for many hours afterwards. He described the pain to be so severe as to interfere with his profession, with his daily life, and causing him to become very irritable. He said there was quite a considerable amount of blood in each bowel movement. He "tried everything in the world," but nothing gave him the least relief. It made him discouraged and at times even despondent.

On inspection he showed a large, irregular, fibrosed sentinel pile which was very painful to the touch. A digital examination was out of question without anesthesia. After some coaxing and persuading I succeeded in getting his consent to inject him with 5 c.c. of nupercain, phenol and oil. Within less than two minutes the anesthesia was complete, the sphincters relaxed, and rectal examination was easy. A deep fissure was revealed. I excised the sentinel and the fissure en masse, and he left the office happy. He was back at work on the third day, and never again had any pain or ache. "I feel like a newborn" is the way he expressed himself.

SUMMARY AND CONCLUSION

The secret of treating an anal fissure successfully is to overcome or to abate the spasticity of the sphincters and to produce a healing process of the lesion.

The preparations mentioned—5 per cent quinine and urea hydrochloride, Benacol, "A. B. A.," and the nupercain, phenol and oil compound—have first, the property of inducing a prolonged anesthesia, thus over-coming the spasm of the sphincters, and, second, the drugs produce a fibrinous exudate which covers and heals the fissure.

In *conclusion,* I wish to stress the point that the aforesaid treatment concerns the fissure in its acute, or obedient, and indurated, or angry, stages. A fissure in the ulcerated, or stubborn, stage, as I have said, can be over-come only by force, and that force lies in the hands of the *surgeon.*

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485 Commonwealth Avenue.

LYMPHOGRANULOMA INGUINALE.*

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Lymphogranuloma inguinale has recently come to the attention of the American medical profession as the result of the work of DeWolfe and Van Cleve[1] and Cole.[2] The number of papers appearing in the literature has increased rapidly. They did not describe a new disease in this country, but one that had gone unrecognized. The profession has had brought home to it with disconcerting force the fact that lymphogranuloma inguinale is not a tropical or subtropical disease, but one that is found relatively frequently in all clinics where it is looked for.

Lymphogranuloma inguinale, a contagious, venereal disease characterized by a subacute infection of the lymph nodes, and particularly the inguinal group, has been recognized and described under a long list of names for nearly a century. As early as 1859-1867, Chassaignac and Velpau,[3] French surgeons, described lymphatic masses of the groin of peculiar character. Sheube,[4] in 1867, while working in Japan, gave the condition the name of "climatic bubo," and subsequent workers throughout the century considered the condition of climatic origin. Lejar, 1894, described a similar condition under the name of "strumous bubois of the groin." Nicolas, Durand, and Favré,[5] in 1913, called the condition "lymphogranulomatosis inguinalis." Bori, 1921, gave the condition the name "ulcère simple adenogenè des parties génitales." In 1922, Nicolas and Favré, before the first Congress of French-Speaking Dermatologists, described the condition as "lymphogranulomatosis inguinales subaigue." Ravau, Boulin and Rabeau suggested the name "paradeno-lymphite suppurée benigne forme septicemigue"; the sixth venereal diseases,[6] Nicolas-Favré's disease; tropical bubo; the fourth venereal disease; and, more lately, lymphopathia venereum, the latter term being used to keep the condition from being confused with other diseases and to show that the condition may involve other than the inguinal group of glands. For example, Curth[7] reported a case with lesion in the tongue and with swelling of the regional glands followed by the formation of sinuses—Frei's test positive. Hansmann[8] reported several cases under the term "nontuberculous lymphadenitis." In 1925 Frei reported his skin test for the condition, and since that time interest has increased, with the greater number of reports coming out of Europe and South America. The first complete report of lymphogranuloma inguinale in this country was by DeWolfe and Van Cleve,[1] in 1932.

*Read before the Richmond Academy of Medicine, September 25, 1934.

CLINICAL COURSE AND SYMPTOMATOLOGY

Lymphogranuloma inguinale is a specific, venereal disease; it is never found in children and only comes on after sexual exposure. According to Anwyl-Davies, King and Findlay,[9] the incubation period is three days to three weeks, generally about two weeks; from coitus to the bubo stage, from ten days to six weeks, generally three weeks.

The primary lesion is painless, very small, and when found, is usually located in the mucous surface of the prepuce. Usually the lesion is transitory and heals spontaneously, and, in the greater percentage of cases, the patient's first knowledge of anything amiss is the developing adenitis. The lesion may be one of four types: papular, ulcerative (this includes herpetiform and erosive lesions), nodular, and urethritic (anatomically chosen). When the latter, the lesion is accompanied by an abacterial urethral discharge of a thin milky pus. About three weeks after coitus the patient notices a swelling in the groin which may be bilateral but

more commonly is unilateral. The onset may be mild or quite severe. In about 50 per cent of the cases the onset may be associated with constitutional symptoms of chilliness, headache, general aching, fever, lassitude, stiffness in the neck, nausea and vomiting, weakness, mild anemia and loss of weight. The fever is higher in the afternoon than in the morning, and the pulse is slow, even when the fever is 102° F. or more, the pulse seldom going over ninety. As a rule the patient shows a mild leukocytosis, but the white count may be normal, or there may be present a leukopenia. There is generally an increase in the large mononuclear cells and some European writers think this of considerable diagnostic importance. The glands increase in size and may reach the proportions of one's fist. They are surrounded by an area of periglandular inflammation. At first the overlying skin is free, but as the glands increase in size the skin becomes adherent to the underlying nodes and takes on a reddish-purple tint, and, as a result of being put on such a stretch, becomes quite shiny. Multiple areas of softening will appear and, in course of time, break down with sinus formation. These sinuses discharge a thin milky pus and tend to persist for a long time. As the disease progresses the iliac glands become involved and may be easily palpated —some thing this almost a pathognomonic sign—but these glands do not break down. A second gland may break down and a communicating sinus develop. The disease is essentially a chronic condition and finally heals by cicatrization, leaving a heavy retracting scar. If the perirectal lymph glands become involved, the condition is even more chronic and more apt to develop serious sequelae. The formation of a stricture may develop to the point of necessitating surgical intervention. The involvement of the perirectal lymph nodes in the female is more apt to occur than in the male, due to the lymph drainage of the female genitalia. According to Cole,[2] the inguinal gland involvement in the female is quite rare. Schulmann[10] reported ten cases with Frei positive reaction, who showed no clinical sign of lymphogranuloma inguinale.

Anorectal Syndrome

Due to the lymphatic drainage in the female, the anal region is more apt to become involved, but a number of workers have shown that this region in the male is not exempt. Following the work of Larsen and especially Fournier,[11] the profession considered the anal stricture as of syphilitic origin (ano-rectal-syphiloma) but an absence of other syphilitic symptoms, negative seriological tests in most patients and the inefficiency of antisyphilitic treatment awakened a suspicion as to the importance of syphilis as an etiological factor. Abscess formation and the discovery of giant cells led to a tubercular theory, which soon gave way to gonorrhea (ano-rectal gonorrhea). This theory in turn gave way to one of traumatic origin (anal coitus). Theories of dysentery infection, chronic constipation and hemorrhoids have had their advocates, but it was not until 1925, when Frei and Koppel had the idea of studying the "ano-rectal syndrome following esthiomene vulvae in relation to lymphogranuloma inguinale," that a true conception of the condition developed. They gave the patients an intracutaneous injection of Frei's antigen and proved the condition as that of lymphogranuloma inguinale. This work later was confirmed by Barthels and Biberstein, Jersild, Nicolas, De Gregorio, Sénèque, Fisher, Langer, Bensande, DeWolfe, Sulzberger, Vizcarrondo, and others.[12]

Quoting from Cole:[2] "To sum up the present feeling in regard to the cause of the inflammatory stricture of the rectum and its relation to lymphogranuloma inguinale, Sénèque says there are four forms: (a) a pure stricture limited to the rectum, (b) a rectal stricture with elephantiasis of the external parts, (c) rectal stricture complicated with fistulas and in the past classified as tuberculous because it is granulomatous in character, even though Koch's bacillus is not found, and (d) rectal stricture with pelvic cellulitis." Jersild[13] believes that stricture of the rectum is nearly always caused by lymphogranuloma inguinale. Most of the strictures are in the first 9 to 10 cm. of the rectum; as a matter of fact, most of them are not higher than 6 cm. Bloom[14] has recently given an excellent report on this syndrome.

Bacteriology and Animal Inoculation

Quoting from DeWolfe and Van Cleve:[1] "Bacteriological research of lymphogranuloma inguinale can be briefly summarized by stating that up to the present time no culturable, visible organism has been discovered as the etiological agent." A few organisms have been found but the workers did not consider them of etiological significance, but rather as a con-

tamination of the culture, or as a secondary involvement in the gland. Tamura[15] did not find anything resembling ordinary bacteria, but when the fluid studied was stained with Giemsa's stain a peculiar granule was brought out, which was absent in the controls. From the literature we can justly assume that the infecting agent of lymphogranuloma inguinale is a filtrable virus.

Up until quite recently no progress had been made in animal inoculation in lymphogranuloma inguinale, but in 1924 de-Bellard,[1] in Venezuela, successfully transmitted the disease to monkeys after intracerebral inoculation. Since then many workers have been able to inoculate animals, passing the disease through several animals and then infecting man with the regained virus, also passing the virus from monkeys to guinea pigs and then re-infecting monkeys.[13]

C. Levaditi, Ravaut, Schoen and J. Levaditi[16] showed that monkeys inoculated with the virus sometimes died with an intense meningoencephalitis and, in spite of autopsy findings, tissue from the animal when inoculated into the other animals was absolutely avirulent. They found that the virulence could be maintained when inoculated into the brains of mice in which it produced asymptomatic infection. Hellerström[1] has shown that the virus is filtrable through Burkfield and Chamberland filters, as he has been able to infect monkeys intracerebrally with such filtrates.

Pathology

The primary lesion as studied histologically by Phylactos[17] and Bory[8] were identical. Both studied lesion from the penis which "showed a small ulcerated area beneath which there was a very heavy infiltration of inflammatory cells, consisting for the most part of plasma cells. Very few polymorphonuclear leukocytes were present. There was marked cellular infiltration along the lymphatics, with cells of the same type. In the lesion were many newly-found blood vessels." Sézary and Lenégre[18] described an ulcer with the appearance of chancroid but all tests for this condition were negative; Sézary and Perrault[19] described an initial lesion with the appearance of syphilitic chancre.

According to Cole,[2] if we inspect a mass of lymphogranuloma inguinale lymph nodes, grossly there will be observed a dense perinodular exudation binding the glands together. On sectioning, the nodes have multiple areas of suppuration, walled off with granulation tissue which is infiltrated with endothelial cells, giant cells and lymphoid cells. Foci of suppuration join and form stellate cavities filled with polymorphonuclear leukocytes. Then there will be other areas of extensive necrosis with little cellular response. Some areas resemble tuberculous, syphilitic, or other infected lymph nodes. There is a thickening of the blood vessels as a result of proliferation of the endothelium. The glands heal by granulation and scar tissue formation.

Differential Diagnosis

Lymphograuloma inguinale has to be differentiated from:

Tuberculosis.—This may be done by finding the evidence of tuberculosis in other parts of the body; animal inoculation; Frei test; histological study; caseation, rather than pus in tuberculosis; and the giant cells are more numerous in tuberculosis.

Syphilis.—By the demonstration of the spirochaete pallida with the dark field; the initial lesion; secondary development, positive serological study, and response to autiluetic treatment.

Gonorrhea and Pyogenic Bubo.—By bacteriological study and the difference in the clinical picture.

Hodgkin's Disease.—In lymphogranuloma inguinale the glands are nearly always confined to the groin, whereas in Hodgkin's disease the other glands in the body are involved. In Hodgkin's the glands do not tend to suppurate or form sinuses. Histological study must also be made.

Bubonic Plague, in some parts of the world.—Differentiated by bacteriological study.

Chancroid.—By the characteristics of the disease and the demonstration of the bacilli of Ducrey.

Prognosis

The prognosis is good as a general rule, although the patient should be told of the chronic nature of the disease. With the stricture development the prognosis becomes more grave and may go to invalidism and, in a few rare cases, death.

Treatment

In the treatment of lymphogranuloma inguinale it will be found that the treatment and result vary with different workers. In a few isolated cases the glands will undergo spontaneous healing even if nothing is done. Surgical extirpation of the in-

volved gland has been followed by complete cure but it must be borne in mind that total removal is sometimes followed by an elephantiasis. When suppuration has occurred the gland should be drained. Hansmann[8] reports four cases with good results following surgery. The greater number of writers think the removal of the suppurating gland is all that is necessary.

Pinard and Robert,[20] following up the work of Levaditi, who found that the virus of lymphogranuloma inguinale lost its pathogenic action in glycerin, began the use of glycerin in the treatment of the condition. They opened the bubo, curetted out the cavity and injected 2 c.c. of glycerin into the opening. Healing began at once and the authors think their results were better than with other methods. Glycerin was used each day until the gland healed. Perkel and Sourgik[21] used intra-glandular treatment with milk, glycerin, pus-vaccine and autopus-vaccine with good results. They used milk in doses of 0.2 to 0.3 c.c. at intervals of two or three days; glycerin in 1.5 to 2 c.c. with the number of injections varying from twelve to fifteen.

Chevallier and Fiehrer[22] and others[23, 24] have reported very favorable results with sodium salicylate when given in massive doses. Katz and Sagher[25] reported thirty cases treated with convalescent serum and think this gave them their best results. Thomas and McCarthy[26] reported a case with complete cure of a large abscess treated with a bouillon filtrate—positive Frei reaction. The wound was packed with gauze saturated with the filtrate. Tamura[16] reported nine cases treated with heated cultured antigen as a vaccine administered subcutaneously, with good results.

Diathermy has been used and, if fistula persists, radiotherapy is indicated. The iodides, iodine and antimony and potassium tartrate are used. Cole[2] says: "In my estimation rest in bed, promotion of free drainage, perhaps along with partial extirpation of the nodes involved, and the use of solutions of antimony and potassium tartrate intravenously gives the best results. Naturally the results in none of the cases of esthiomene and anal stricture are particularly good."

Frei test[28]: The antigen for the Frei test is prepared by aspirating one of the suppurating glands and diluting the pus obtained with normal saline one to ten, care being taken that no external contamination occur. This mixture is heated at 60° Centigrade for two hours the first day and one hour the second day at the same temperature. An emulsion of the suppurating gland can be made to serve the same purpose. This material when cultured for sterility is ready for intradermal injection of 0.1 c.c. The antigen when injected into a positive case produces a papula of varying size within twenty-four hours and persists for several days. This cutaneous allergy is said to develop quite early in the disease and persist for years. DeWolfe and Van Cleve,[1] Lépinay and Grévin[27] as well as the majority of other workers, think the test quite specific. Phenol may be added to the emulsion as a preservative and, if this is done, a control of phenol and saline has to be run at the same time as the test. Tamura[16] reported the use of an antigen made from the cultured virus that is just as effective as that made in the usual methods of preparing Frei's antigen from pus.

Case Reports

Case 1.—J. H., Negro, male, age 45, reported to me on March 15, 1932, with history of a "rising in his groin" which had begun three weeks before and on two occasions during this time he had thought the lump would disappear. It had been painful, but the patient continued to work. He gave no history of sexual exposure and denied the presence of a sore on the penis. He had had general soreness, headache and a chilly feeling. Examination revealed a well-developed and nourished Negro man about 45. Head, neck, chest, and abdomen were negative. In left groin an inguinal gland was found about the size of a small lemon with area of suppuration. The gland was surrounded by quite extensive periadenitis. No sore or discharge was found on the penis. The extremities were negative. The temperature was 100° F., and pulse 80. The next day the gland was opened under novocaine, and a thin, milky pus was obtained. Patient felt better at once but fistula continued to drain. On April 18th, a second gland was opened and the third gland on June 2nd. There developed a communication between these three fistulae which did not heal until the last of August. Healing left a heavy retracted scar. A Frei test in the latter part of 1933, positive, revealed the true etiology of the condition. Wassermann negative.

Case 2.—F. J. H., white, male, age 26, first seen

July 26, 1933, with history of having been feeling badly for two weeks. At the beginning of sickness noticed a swelling in right groin that had gotten larger. Had general aching, headaches, chilly feeling, occasional sweats and complained of lots of pain in the groin. A history of clandestine sexual exposure two or three weeks before was secured from another member of the family. The patient denied any lesion on penis. No other history was in any way related to the case. Physical examination showed a well-developed and nourished white man, in bed, who did not appear very sick. Head and neck, chest and abdomen were essentially negative. The right inguinal gland was swollen with extensive periglandular tissue involvement. The gland showed little breaking down. Temperature 99.8° F.; pulse 72; no lesion or discharge was found on penis; the Wassermann was negative. He was given iodides, hot wet dressings and sedatives, and the gland was opened on July 28th. That day the skin over the gland had a reddish-bluish tint, and the skin was adherent to the gland. The iliac glands were palpated the day the gland was opened. They very readily disappeared and when tested September 8. 1933, with Frei antigen (very kindly supplied by Drs. Cole and De Wolfe, of Cleveland), gave a very strong positive. By the last of September the glands had healed.

Case 3.—Mrs. F. J. H., white, female, age 25, first seen July 26, 1933, with history of having a rising in right groin for about one week, associated with pain in the affected part, chilliness, headache, malaise, weakness, sweats. Her first knowledge of anything wrong was the involved gland and the above-named symptoms. The only history of importance was that her husband, *Case* 2, had been caught leading a clandestine sexual life. Her condition followed that of her husband by about one week.

Physical examination: Head and neck, chest and abdomen were negative. In the right groin the inguinal glands were enlarged, tender to touch, with a large amount of periglandular inflammation. Temperature 101° F., pulse 85. She was put to bed, given hot compresses to parts, iodides and sedative. The glands increased in size and on September 7, 1933, when opened, had become adherent to the skin and the overlying skin had taken on a reddish-bluish tint. When the gland was opened about 15 c.c. of thin, milky pus was aspirated. The next day she was Frei tested and found to be strongly positive. Wassermann negative. One week later a second gland was opened, and a communicating fistula developed. On October 11th, she was given 5 c.c. of 1 per cent solution of tartar emetic intravenously, having refused intravenous medication up to this time. This was repeated every three days for six doses. About this time, October 11th, she noticed a gland in the right side of her neck, and this increased to the size of a small marble, broke down and discharged a fluid similar to that of the inguinal gland; it then healed very rapidly. She was discharged December 5, 1933, as well. The iliac glands were not palpated and all symptoms disappeared when the gland began to drain.

Case 4.—R. L. B., Negro, male, age 26, occupation, runner for "policy game," first seen March 12, 1934, at home. He was complaining of pain all over the body, chilly feeling, headache, malaise, weakness, loss of appetite, nausea and vomiting (once) and a "rising in right groin" that began five days before. The rising got larger and was associated with a good deal of pain. There was no history of any lesion on penis nor of any discharge. Wassermann negative. In 1933 the patient had had gonorrhea. Other history irrelevant.

Physical examination: Negro man, well-developed and nourished, and appearing sick. Head and neck negative except for a little reddening of the pharynx. Chest and abdomen negative. Temperature 101° F.; pulse 84. March 14, 1934, temperature 99° F.; pulse 76. White count 8,200; polymorphonuclear leukocytes 68; lymphocytes 30; myelocytes 2, R. B. C. 4,300,000; Hgl. 80 per cent. Wassermann negative.

The patient was given rest in bed, sedative, hot applications, and iodides. March 19, 1934, the Frei test was positive; inguinal gland getting soft. 5 c.c. of tartar emetic, 1 per cent solution, given.

The patient refused to have the gland opened, but reported twice weekly for tartar emetic and the gland gradually got smaller. The patient was given 10 ampules of tartar emetic and discharged as well.

Case 5.—Colored female, wife of *Case* 4, reported with history of pain in back and lower abdomen following child-birth one year earlier. Examination revealed a well-developed and nourished female with examination negative until pelvic was done. This

revealed lacerated perineum, and prolapse of a subinvoluted uterus. No glandular enlargement made out; rectal examination negative. A Frei test was done on account of her husband's history and found to be positive.

Case 6.—O. R. T. (seen with Dr. A. B. Gravatt, of Ellerson, Va., April 17, 1934), age 31, assistant foreman in railroad yard, single. He first consulted his doctor March 20, 1934, for "swelling in the left groin that had begun on March 13th-14th, had gradually gotten larger and was associated with a good deal of pain"; sick headaches, loss of appetite; nausea and vomiting at intervals for about one week; stayed cold all the time, and had one chill; fever as high as 101° F., number of sweats, constipated, slight pain in both knees, weakness and malaise, loss of weight—twenty-five to thirty pounds. A swelling in the right groin appeared one week after that in the left groin. A history of regular sexual exposure.

Past history showed there had been arthritis of left knee; gonorrhea, 1931. Other history was negative.

Physical examination: Well-developed and nourished white male acutely ill when first seen by his doctor. Head and neck, chest and abdomen negative.

Left inguinal gland swollen to the size of a lemon and surrounded by extensive periglandular tissue; skin adhering to underlying gland and of a peculiar bluish color. Right gland negative at this time. The left gland was opened March 23rd and did not discharge any pus, but two days later began to discharge a large amount of a thin, milky pus. One week later the right gland was opened.

When seen by me on April 7th, the physical examination was negative except for the inguinal region—bilateral glandular enlargement with discharging fistulae. Iliac glands could be palpated; a reddish-bluish discoloration of the skin over the involved parts and adherent to the underlying glands. Rectal examination was negative. Frei test positive. Wassermann negative. He was given a 1 per cent solution of antimony and potassium tartrate and rapidly cleared up.

Case 7.—W. G., Negro, male, age 25, porter, reported June 2, 1934, with history of "hard lump" in both groins that had gradually gotten larger and was associated with very little pain, sweats, loss of appetite and headaches. He gave a history of a very small sore on the penis that lasted three or four days and disappeared without any treatment. The lumps in his groin followed this lesion by some two or three days.

Past history was negative.

Physical examination: Well-developed and nourished Negro man who did not appear very sick. Head, neck, chest and abdomen were negative. In the right groin was an enlarged gland about the size of a lemon, surrounded by a large amount of periglandular inflammation. The overlying skin was adherent to the gland and very dark. The left groin presented a similar picture except about one-half the size of the right gland; iliac glands palpated; rectal examination negative.

On the penis was a very slight scar that marked the site of the initial lesion. Temperature normal; pulse 80; respiration 20. Frei reaction strongly positive. Wassermann negative. Urinalysis negative.

Following the work of Chevallier and Fiehrer,[22] Tamura and Aubrun,[24] the patient was put on large doses of sodium salicylate but showed no improvement. On June 28th, the right gland was opened and discharged a thin, milky pus. The left gland remained stationary.. The patient very rapidly cleared up on 1 per cent solution of antimony and potassium tartrate, given intravenously.

SUMMARY

1. Lymphogranuloma inguinale is a venereal disease caused by a filtrate virus.

2. It is not as rare as was supposed in this climate, and is not confined to seaports.

3. The prodromal symptoms are those of a septicemia, with local inguinal adenitis, but not necessarily confined to this group of glands.

4. A large percentage of rectal stricture can be traced to lymphogranuloma inguinale as the etiological factor. This is particularly true of women, due to the lymph drainage of the parts.

5. The intradermal Frei reaction is quite specific as a diagnostic agent.

6. Treatment consists of rest in bed during the early stages; intravenous use of antimony and potassium tartrate, and opening of the gland if it breaks down. Sodium salicylate was not effective in the one patient treated with this drug. This

may have been due to the fact that my patient could not tolerate the dosage usually prescribed.

7. One patient with a positive Frei reaction is reported with no clinical manifestation of the disease; another patient is reported with a cervical gland involvement that appeared to be exactly like the inguinal gland, which was the first gland to become involved.

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211 West Grace Street.

THE NEED FOR ESSENTIAL CHANGES IN THE PREPARATION OF NURSES FOR SERVICE TO THE COMMUNITY.

ETHEL M. SMITH, R. N.,
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Craigsville, Va.

I am asked to explain the necessity for revision in the curricula of our Schools of Nursing and to outline the proposed method of putting this into effect. It is impossible at this time to speak with any finality since the whole readjustment is in the formative stage. It is recognized that there are valuable elements in the present system of education that must be retained, but also certain defects to be corrected. Society is demanding a better prepared product.

The Rockefeller Report (1923) revealed the shortcomings of the education offered nurses for their work as graduates. Nurses at once became concerned in effecting a remedy. Requests came from all directions that an analysis of the situation be made, and in 1926 a Grading Committee, composed of Doctors, Educators, Lay People and Nurses was formed. The nursing profession voluntarily contributed over $137,000.00 towards the expense of this detailed survey, which covered an eight-year period. All accredited Schools of Nursing were invited to participate and the Virginia Schools responded 100 per cent. As each report of the Committee was released, revealing weaknesses even in the training given for care of patients in hospitals, a conscientious effort was made to remedy these defects. All credit is due our hospitals for this effort. Virginia is recognized as being possessed of courage to Face Facts Valiantly.

The final analysis showed the system of education faulty, nurses being prepared only for the care of hospitalized patients. A changing social order demanded something more. In addition to being taught to give expert bedside care, nurses today should be taught to observe and interpret social factors and be capable of taking part in the promotion of health and prevention of disease. The field of Preventive Medicine calls for professional service that nurses should render, but we continue to qualify them for local hospital needs primarily, giving little consideration to social needs at all.

The Committee on the Cost of Medical Care makes this interesting statement:

> There is a need for a rearrangement of curricula and a revision of the fundamental purposes of many Nursing Schools, so that they will produce socially-minded nurses with a preparation basic to all types of nursing service. The care of hospital patients is not, in and of itself, sufficient preparation for professional nursing.

Dr. Arthur Ruggles, addressing the Convention of the National League of Nursing Education recently, announced that after two whole days of "listening in" he was prepared to state that the revision of our curriculum was in the safe hands of thinking experts. The nursing profession feels it is. A Central Curriculum Committee is now releasing by degrees its suggestions for improvement. Adjustment in clinical experience and instruction is necessary for the preparation of the private duty nurse even more urgently than for the nurse going out into a specialized field. For the latter, post-graduate work is essential. The young private duty nurse, however, after three years of training, is expected to enter a home prepared to adjust herself to any condition she finds, to possess an understanding of conservation and preservation of health, and to exert real technical skill in her nursing. A wonderful opportunity for service, if prepared.

This year the Board of Examiners requested the Schools to arrange a course in Sociology and some affiliation in Public Health. The reasons must be obvious. More than this has not yet been attempted.

Recently the Board invited several outstanding Educators and representatives from the State Board of Health, and the Hospital and Medical Associations to act in an advisory capacity in decisions effecting necessary adjustments. The response indicated great interest. It is confidently felt by the Board that with such help, results satisfactory to all can be attained.

Correspondence

"Medical Insurance Practice" or The English "Panel System."

THE PLAINS, VA.

TO THE EDITOR:

Dr. M. B. Hiden and I sailed from New York on the North German Lloyd S. S., "Europa" on July 17th, landing at Cherbourg, France, on July 22nd. From there we went with our party of twenty-nine people to Paris, Lucerne, Switzerland, Milan, Venice, Florence, and Rome, then back along the Mediterranean through Southern France to Paris. After another night and day in Paris we crossed the Channel and went by train to London then to Leamington, England, and through the "Shakespeare" country, Stratford-on-Avon, Warrick and Kenilworth Castle, by coach. Then by train again to Edinburg, Scotland, and on up into the Lake country, "Lochs Lomand," "Katherine" and others, back to Edinburg, then back to London for a week.

Now I come to the part of our trip that should be of particular interest to all medical men and women, as well as to every public spirited person. We visited historical St. Thomas Hospital where Florence Nightingale first instituted trained nursing and taught the first class of trained nurses. Though antique looking on the outside, we found St. Thomas spick and span on the inside, and as thoroughly equipped and up-to-date as any American hospital I have ever seen. All we had to do was tell them we were two visiting Doctors from America and immediately the doctors, nurses and attendants extended us a most courteous hospitality showing us through the entire hospital and inviting us to stay and watch operations as long as we wished and to come back as often as we could while in London. Remembering what my friend Dr. Vickers had told me about "Medical Insurance Practice" or the "Panel" system, as it is called in England, I began asking questions and getting all the information I could. The doctor who was showing us through the hospital was very kind, giving us some valuable information and finally advising us to go to Dr. Charles Hill, M. A., M. B., B. Ch., and D. P. H., of the British Medical Association at Tavistock Square. We found Dr. Hill a most charming gentleman, giving us three-quarters of an hour of his valuable time and presenting each of us with a book of some 350 pages, describing in detail "Medical Insurance Practice" for which he would accept no pay. He told us briefly that the doctors who had been most opposed to the system when it was first put into practice in 1912 were now, without exception, enthusiastically in favor of it, and that the scheme applies with certain exceptions to all persons employed by way of manual labor and to all other employed persons whose rate of remuneration is not more than £250 (about $1,250) a year. The employed person and the employer pay small weekly contributions, the State adds a grant out of the public exchequer, and these contributions together are used to take care of the insured persons and their families during sickness, whether employed or unemployed. He also told us that the system was entirely eliminated from politics and was under the sole management of the British Medical Association or a committee appointed by that Association. He seemed perfectly willing to give us more of his time but feeling that we had already imposed on him too long we accepted his present of the books, thanked him and bade him good-bye.

That evening Dr. Hiden invited me to attend a meeting of the London Rotary Club at one of the larger hotels. There we were delightfully entertained, "wined and dined," there being present several hundred of the usual "cross-section" of the professions, avocations and occupations represented in Rotary, and again I began seeking information. After talking to a number of these men just as I met them at Rotary dinner, I became convinced that not only the medical profession but the public generally is just as enthusiastically in favor of the "Panel" or "Insurance" system of medicine as the doctors are, which is about 100 per cent.

I believe if we will organize thoroughly, so that politics can't get in and corrupt it, this system, with some modifications to suit conditions here, may be made to work just as efficiently in America as it has in England where it has been in successful operation for the past twenty-three years. With our ever-increasing population and consequent increase in the number of poor and unemployed families to be taken care of, it must be obvious to every thinking person that the doctors cannot alone continue indefinitely to carry this great burden and that some such form of medical practice is inevitable. So,

why not adopt one that has been tried out and found to be clean, efficient and successful?

RICHARD MASON, M. D.

August 31, 1935.

Medical and Surgical Diathermy.

CLARENDON, VA.,

SEPTEMBER 17, 1935.

TO THE EDITOR:

I was attracted by Dr. P. D. Stout's article in the September VIRGINIA MEDICAL MONTHLY and desire to compliment him on his technique.

At the same time, I would like to mention the work of Dr. T. A. Poole, of Washington, D. C., who reports consistently gratifying results from a similar technique he has perfected. I have observed Dr. Poole at work and noted that he begins in the center of the tonsil and does a small amount of desiccation at each visit, enabling him to note the healing process step by step and avoid burning the anterior or posterior pillars. He does not inject with cocaine but prefers to apply his anesthetic topically on a cotton swab with wood applicators.

It has occurred to me that these two men might cooperate in evolving a procedure that would establish this as an efficient, modern, and fascinating method for the removal of tonsils.

B. F. MONTGOMERY.

Special Meeting.

TO THE PHYSICIAN'S OF FOURTH CONGRESSIONAL DISTRICT.

There will be a meeting of all the physicians residing in the Fourth Councilor District of Virginia on the afternoon of Tuesday, November 12th, at 2:30 P. M., in the Medical Arts Building at Petersburg. The Fourth District now includes the counties of Appomattox, Buckingham, Cumberland, Prince Edward, Powhatan, Amherst, Nottoway, Lunenburg, Mecklenburg, Dinwiddie, Brunswick, Greenesville, Prince George, Surry and Sussex and the cities within this territory.

There will be an excellent scientific program, a good dinner and entertainment.

A photograph of every physician in this territory is desired. These will be placed on a large cardboard and a prize will be given to the one who gives the correct name and address of the largest number of physicians residing in this territory.

Send in your photograph to the undersigned immediately. If you have no other photograph convenient, send a good Kodak picture.

The meeting will be held in conjunction with the Postgraduate Medical Society and the Department of Clinical and Medical Education of the Medical Society of Virginia.

Mark the date on your calendar and send me your photograph today.

WRIGHT CLARKSON, *Councilor,*
Fourth District.

New Members

Since the names listed in the April issue of the MONTHLY, the following have been admited to membership in the Medical Society of Virginia:

Dr. David H. Andrew, Wytheville.
Dr. Louis P. Bailey, Nathalie.
Dr. Edwin E. Barksdale, University.
Dr. Harvey G. Bland, Newport News.
Dr. Albert T. Brickhouse, Hopewell.
Dr. William H. Bruce, Pennington Gap.
Dr. Reynoldson D. Butterworth, Richmond.
Dr. Charles C. Canada, Staunton.
Dr. William E. Fahrney, Broadway.
Dr. Major S. Foster, Dayton.
Dr. Benjamin E. Hunt, Hampton.
Dr. Jethro M. Hurt, Blackstone.
Dr. John O. Hurt, Staunton.
Dr. Joseph R. B. Hutchinson, Lyon Village.
Dr. Robert C. Keys, Waynesboro.
Dr. Albert B. McCreary, Eastville.
Dr. James A. Miller, Winchester.
Dr. John D. Miller, Bridgewater.
Dr. Charles R. Robins, Jr., Richmond.
Dr. Richard F. Slaughter, Jr., Norfolk.
Dr. George G. Tanner, Grottoes.
Dr. John A. M. Thompson, Charlottesville.
Dr. Douglas D. Vance, Bristol, Tenn.
Dr. Claude W. Vaughan, Harrisonburg.
Dr. John A. Wolfe, Staunton.

PROGRAM

MEDICAL SOCIETY OF VIRGINIA

Sixty-sixth Annual Session

Norfolk, Virginia

OCTOBER 15, 16 and 17, 1935

MONTICELLO HOTEL—*Headquarters*

SCIENTIFIC PROGRAM

GENERAL SESSIONS

Tuesday, October 15

8:00 P. M.

Ballroom, Monticello Hotel

Call to Order—William Lett Harris, M. D., Chairman, Committee of Arrangements.

Invocation—Rev. Taylor Willis, Rector, Christ-St. Luke's Church.

Address of Welcome—J. W. Hunter, M. D., President, Norfolk County Medical Society.

Announcements.

Address of President—Francis H. Smith, M. D., Abingdon.

Memorial Hour.

Address—The Answer of the Medical Profession to State Medicine—Arthur C. Christie, M. D., Washington, D. C. (*Invited Guest.*)

Wednesday, October 16

9:00 A. M.

Medical and Surgical Sections

Medical Section—Monticello Hotel

Essential Hypertension and Bright's Disease: Their Differential Diagnosis and Treatment.

PAUL D. CAMP, M. D., Richmond.

Essential hypertension accounts for great majority of high blood pressures, whereas, Bright's Disease is responsible for relatively few. Differential diagnosis and treatment of the two conditions are discussed.

Discussion opened by Frederick C. Rinker, M. D., Norfolk.

Remarks on the Diagnosis of Coronary Thrombosis.

BLANTON P. SEWARD, M. D., Roanoke.

The purpose of this paper is to call attention to certain conditions that may cause symptoms simulating coronary thrombosis. Cases to illustrate the points of similarity will be cited.

Discussion opened by J. Edwin Wood, Jr., M. D., University.

Paroxysmal Tachycardia.

ALEXANDER G. BROWN, JR., M. D., Richmond.

A description of this heart disorder; its manner of sudden onset and sudden cessation; its symptoms and dangers. Treatment by mechanical means, by quinidin, by digitalis, and other drugs and measures.

Discussion opened by J. Edwin Wood, Jr., M. D., University.

The Heart in Myxedema: Clinical and Postmortem Findings.

WILLIAM H. HIGGINS, M. D., Richmond.

The heart in myxedema is a distinct clinical and pathologic entity. It seemingly bears a direct relationship to abnormal cholesterol metabolism. Antemortem and postmortem studies are discussed.

Discussion opened by Walter B. Martin, M. D., Norfolk.

Rocky Mountain Spotted Fever (Eastern Type) with Data from Nine Cases.

WILLIAM P. CATON, M. D., Alexandria.

This paper gives data from nine cases treated by the writer in Fairfax County, Virginia, since 1930.

Discussion opened by H. A. Latane, M. D., Alexandria.

Cicatricial Stenosis of the Esophagus: Report of Cases.

C. C. COOLEY, M. D., Norfolk.

Most strictures of the esophagus are caused by caustics, especially lye. Excellent results are safely obtained by gastrostomy, followed by retrograde dilatation with Tucker bougies.

Discussion opened by A. A. Burke, M. D., Norfolk.

Enuresis in Children.

JAMES V. BICKFORD, M. D., Norfolk.

A series of twenty-five cases of enuresis in children treated by psychological approach, with an analysis of the therapeutic results.

Discussion opened by Wm. P. McDowell, M. D., Norfolk.

Surgical Section—Monticello Hotel

Unusual Indications for Caesarean Section. (*Illustrated.*)

C. J. ANDREWS, M. D., Norfolk.

RICHARD B. NICHOLS, M. D., Norfolk.

Report of sections for pregnancy in rudimentary horn, double uterus, post-radium cases, labor complicated by fibroids, placenta previa, eclampsia, and pregnancy following vesico vaginal fistula.

Discussion opened by M. P. Rucker, M. D., Richmond.

Acute Intestinal Obstruction.

HARRY J. WARTHEN, M. D., Richmond.

A study of one hundred consecutive small bowel obstructions treated at the Medical College of Virginia Hospitals during the past five years.

Discussion opened by C. B. Morton, M. D., University.

Fractures of the Hip.

M. H. TODD, M. D., Norfolk.

Extracapsular hip fractures unite by bone; intracapsular fractures, only in 50 per cent. Results can be improved by Cotton artificial impaction, or by open reduction if necessary.

Discussion opened by Foy Vann, M. D., Norfolk.

Non-Union of Fractures of the Humerus. (*Illustrated.*)

DONALD M. FAULKNER, M. D., Richmond.

Critical review of five cases of non-union of fracture of shaft of humerus and one case of long delayed union, accompanied by slides.

Discussion opened by Robert V. Funsten, M. D., University.

The Diagnosis and Treatment of Cancer of the Large Bowel.

J. SHELTON HORSLEY, M. D., Richmond.

Early diagnosis, prompt radical operation can greatly reduce mortality from cancer of colon. Cancer of right half of the colon is operated upon in one or two stages, and of left half in three stages. Cancer of rectum should usually be removed in one stage.

Discussion opened by I. A. Bigger, M. D., Richmond.

Vascular Surgery Necessiated by Trauma.

JULIAN L. RAWLS, M. D., Norfolk.

The need of more general knowledge of the possibilities of vascular surgery by the general surgeon. Operating rooms should be equipped for emergency vascular surgery. Report of cases.

Discussion opened by Lomax Gwathmey, M. D., Norfolk.

Present-Day Treatment of Certain Malignant Diseases.

VINCENT W. ARCHER, M. D., University.

W. L. KILBY, M. D., University.

A discussion of present-day methods of treatment of apparently hopeless malignancies of head, neck, cervix, and bladder is presented with a fair percentage of cures. The untoward sequelae occasioned by this treatment are also presented.

Discussion opened by Fred Hodges, M. D., Richmond.

General Sessions

Wednesday, 3:00 P. M.

Monticello Hotel

Cancer Control. (*Illustrated.*)

WRIGHT CLARKSON, M. D., Petersburg.

ALLEN BARKER, M. D., Petersburg.

An effort to reduce cancer mortality by calling attention to certain fundamental reasons for the present death rate and making recommendations for the correction of the same.

Discussion opened by J. Shelton Horsley, M. D., Richmond.

Dermatoses and Cold Weather.

RAYMOND KIMBROUGH, M. D., Norfolk.

Causes, prevention and treatment of dry, rough itching winter skin irritations. Value of knowledge about soaps, oils, lotions, and creams for the different conditions. Ichthyosis is discussed briefly.

Discussion opened by D. C. Smith, M. D., University.

Symposium on Therapy

The Treatment of Acute Respiratory Diseases.

F. C. RINKER, M. D., Norfolk.

The Treatment of Acute Infections of the Upper Urinary Tract.

JOSEPH F. GEISINGER, M. D., Richmond.

The Treatment of the Toxemias of Pregnancy.

T. J. WILLIAMS, M. D., University

A More Rational Treatment for the Mental Patient. H. C. HENRY, M. D., Petersburg.

General Discussion.

Wednesday, 8:00 P. M.

The Problem of Pleural Adhesions in Pulmonary Tuberculosis. (*Illustrated.*)

E. C. DRASH, M. D., University.

J. B. NICHOLLS, M. D., Catawba Sanatorium.

A discussion of 125 cases of therapeutic pneumothorax, who have had pleural adhesions severed to improve the collapse. Illustrated by lantern slides.

Discussion opened by I. A. Bigger, M. D., Richmond.

The Significance and Diagnostic Importance of Pain in Disease.

JAMES E. PAULLIN, M. D., Atlanta, Ga.

(*Invited Guest.*)

Non-Tuberculous Suppurative Condition of the Lung Treated by Artificial Pneumothorax.

C. L. HARRELL, M. D., Norfolk.

Abscess in the lung will heal with proper drainage. It is the author's opinion that if a small quantity of air is injected into the pleural space to act as a buffer and prevent adhesions, it is the safest and easiest way of promoting proper drainage to abscess in the lung.

Discussion opened by C. W. Scott, M. D., Newport News.

Fever Therapy in Neurosyphilis.

R. FINLEY GAYLE, JR., M. D., Richmond.

This is an evaluation of the merits of the several types of fever therapy used in treatment of neurosyphilis. The technique of malarial inoculations and use of diathermy is discussed.

Discussion opened by J. A. Shield, M. D., Richmond.

External Version in the Eighth Month for Breech Presentations.

PAIGE E. THORNHILL, M. D., Norfolk.

Report of fifty-eight breech cases, forty-nine of which were successfully turned. Vertex delivery is six times safer for the child.

Discussion opened by Waverly R. Payne, M. D., Newport News.

Thursday, October 17

9:00 A. M.

Observations on History Taking in Allergy.

OSCAR SWINEFORD, M. D., University.

The importance of this history; outline or guide for taking histories; some illustrative cases.

Discussion opened by

Management of the Allergic Individual.

W. AMBROSE MCGEE, M. D., Richmond.

Success in caring for allergic patients depends upon thorough and exhaustive investigations, cooperation, use of numerous scratch and intradermal tests and specific antigens for treatment.

Discussion opened by Oscar Swineford, M. D., University.

The Results of Roentgen Treatment of Some Very Advanced Malignancies.

FRED M. HODGES, M. D., Richmond.

Some results which can be obtained at present in certain extremely advanced malignancies through the use of high voltage heavily filtered roentgen rays are discussed.

Discussion opened by Vincent Archer, M. D., University.

An Outbreak of Anterior Poliomyelitis in Charlottesville, Va., and Albemarle County.

W. W. WADDELL, JR., M. D., University.

Analysis of 110 cases of poliomyelitis observed in clinics of University of Virginia Hospital from standpoint of clinical and laboratory findings. The estimated incidence in Charlottesville and Albemarle is discussed briefly.

Discussion opened by Wyndham B. Blanton, M. D., Richmond.

Poliomyelitis: Diagnosis of the Varieties.

HOWARD R. MASTERS, M. D., Richmond.

LEE E. SUTTON, M. D., Richmond.

A discussion of the difficulties met in diagnosing poliomyelitis during an epidemic with mention of illustrative cases.

Discussion opened by F. H. Redwood, M. D., Norfolk.

The Diagnosis of Early Syphilis.

E. E. BARKSDALE, M. D., University.

D. C. SMITH, M. D., University.

A discussion of modern methods of diagnosing early syphilis including the dark-field examination of mailed specimens and contact follow-up and follow-back as a method of increasing efficiency of diagnosis.

Discussion opened by Thomas W. Murrell, Richmond.

Oyster Roast (Subscription) at Lynnhaven Bay

ANNOUNCEMENTS

Registration and Information Bureau

Monticello Hotel—Seventh Floor.

Dues may be paid at the Registrar's desk. Please advise Registrar of any change of address.

SCIENTIFIC SESSIONS

Monticello Hotel—Seventh Floor.

BUSINESS SESSIONS

Council—Tuesday, October 15, at 10:00 A. M., at Monticello Hotel.

House of Delegates—Tuesday, October 15, at 11:15 A. M., at Monticello Hotel.

EXHIBITS

Scientific—Monticello Hotel, Seventh Floor.

Commercial—Monticello Hotel, Seventh Floor.

OYSTER ROAST

A subscription oyster roast will be held on Thursday afternoon, following the close of the meeting, at Lynnhaven Bay, twelve miles from the city. Automobiles will be provided for anyone who does not have his own car.

Tickets will be $1.50 each and may be obtained from the registration desk.

Ladies are also invited to this oyster roast.

GUESTS

Tuesday night—Arthur C. Christie, M. D., Washington, D. C.

Subject—The Answer of the Medical Profession to State Medicine.

Wednesday night—James E. Paullin, M. D., Atlanta, Ga.

Subject—The Significance and Diagnostic Importance of Pain in Disease.

WOMAN'S AUXILIARY

Monticello Hotel

GOLF TOURNAMENT

The golf tournament will be held Tuesday, October 15, at the Norfolk Golf Club. This will be followed by lunch. Club handicap required. Apply to Dr. Claiborne Willcox, Medical Arts Bldg., or Dr. M. B. Savage, Wainwright Bldg., both of Norfolk.

Reports for the Sixty-sixth Annual Session of the Medical Society of Virginia

INTRODUCTORY NOTE

The reports which are to have the consideration of the House of Delegates at the Norfolk meeting of the Medical Society of Virginia, October 15th, 16th, and 17th, are given below, in order that the delegates and alternates from the component societies may acquaint themselves with this business and be prepared to discuss and act upon the reports promptly when they are brought up by the President. This plan will expedite the work of the House of Delegates and allow its members more time for attending the scientific sessions.

The Council

MINUTES OF THE MID-SESSION MEETING

The Council of the Medical Society of Virginia held its mid-session meeting on the afternoon of February 11, 1935, at its offices in Richmond, Va., with the president, Dr. F. H. Smith, of Abingdon, presiding. Others present were: Drs. J. L. Rawls, R. W. Miller, Wright Clarkson, E. H. Miller, W. L. Powell, J. E. Knight, C. O. Dearmont and C. B. Bowyer, councilors from the 2nd to 9th districts, inclusive, Dr. P. St. L. Moncure, president-elect, and Drs. Carrington Williams and Alex. F. Robertson, Jr., vice-presidents, and Miss Agnes Edwards, secretary.

It was moved that reading of the minutes of the last meeting of the Council, as printed in the November issue of the MONTHLY, be dispensed with.

The Norfolk County Medical Society had suggested October 15th, 16th, and 17th, as dates for our 1935 meeting in Norfolk, and these were adopted by the Council. Dr. Rawls, councilor from Norfolk, wished to know the opinion of the Council with regard to entertainments, in view of the action taken for the last three meetings. After discussion, motion was adopted to try to arrange for a subscription oyster roast on the last day of the meeting, this to be held at the luncheon hour in time for members to catch the afternoon trains home.

Dr. F. S. Johns, chairman of the Committee on Legislation, presented a resolution asking the Society to go on record as opposing the appointment of a layman as manager of the Veteran's Administration Facility at Roanoke, Va., and recommending and endorsing the appointment of a properly qualified physician in this position. The discussion brought out the fact that a physician had been placed in charge of the medical arrangements of this Facility. As some of the councilors felt it better to let this matter stay as it had been arranged it was voted to table this resolution.

Miss Edwards stated that the Society's Liberty Loan Bonds are among those that have been called on April 15th, and wished instructions as how to reinvest this money. It was voted that this money be invested in U. S. bonds to be approved by the Finance Committee—Drs. Clarkson and R. W. Miller.

Dr. Clarkson said that the Petersburg Medical Faculty had been talking about a plan of sickness insurance for people of moderate means in that city, but they had decided not to take any definite steps about this until they could have an opinion from the Council. The members discussed the plan with Dr. Clarkson, following which a resolution was adopted that the Council of the Medical Society of Virginia has no objections to a component society adopting any insurance plan that meets with the approval of the local society and is controlled by it, provided it does not interfere with the right of any patient to choose his or her physician or with the right of any physician to refuse to accept a contract to give medical services to a patient or a group of patients, with the further proviso that the plan is not in conflict with the Code of Ethics of the American Medical Association.

Dr. R. W. Miller said that in the thirty years since the adoption of the Federal Food and Drugs Act, there have been many notable developments and changes which make the present law inadequate to meet modern conditions and that the American Medical Association had petitioned the U. S. Congress to revise the present legislation regarding this Act. The Council voted to endorse the action of the American Medical Association asking for this revision.

Prior to the meeting of the Council there had been a general meeting to which had been invited every member of the State Society. The object of this meeting was to hear the report of the Committee on Medical Economics with regard to Sickness Insurance and to have a free discussion of the subject. Dr. A. F. Robertson, chairman, presented *Resolutions from the Committee on Medical Economics*. These were later presented to the council as follows:

Whereas, sickness insurance is being agitated and urged by various agencies, and

Whereas, some form of health insurance is one of the objectives of the President's Economic Security Committee, under the caption of "provision for meeting the economic risks of illness," and

Whereas, it is the stated purpose of the President to submit a message to Congress on this subject shortly after March 1, 1935, and

Whereas, a particularly pernicious bill has been introduced by the American Association for Social Security—the so-called Epstein Bill which takes the control of medicine entirely out of the hands of physicians and places it in the hands of lay individuals;

Therefore, be is resolved, that the Medical Society of Virginia reaffirm its stand taken in 1933 of opposing any general scheme of group payment for medical care, and, especially, a policy of national health insurance, for the reason that:

1. It furnishes an inferior type of service which does not provide adequate medical care. This service becomes inferior because:
   a. Its actual control falls not into the hands of the medical profession but into the hands of the bureaux, composed largely of non-medical persons—and such bureaux have become powerful political machines more concerned with the building up of power than with the character of the medical services provided for the insured;
   b. It has done away with the intimate personal relationship between the patient and the physician and has substituted a feeling of suspicion and antagonism and so created an atmosphere in which the ingenuity, creative ability, leadership, and satisfactory medical care have languished;
   c. The quantity of minor and imaginary ailments produced which are not benefited by medical care, together with numerous reports, have so taken up the time of the examiners that the examinations have been hasty and superficial;
   d. Where drugs have been provided, it has inevitably led to overmedication.
2. It does not further preventive medical care as the statistics of all countries show no change in mortality rates and a tremendous increase in sickness rates. Where cash benefits are provided the insured are more interested in these benefits than in the prevention of disease.
3. It entails enormous governmental expenditures and results in increased taxation.
4. It is a particularly evil form of paternalism and distinctly un-American, for the government on the one hand to single out one profession and tell them how to run their business, and on the other hand, to tax individuals and corporations to provide the money, and to decide for them how it is to be spent, and

Further, be it resolved, that the following steps be taken to insure adequate medical care to the citizens of Virginia.

1. That each county medical society foster committees composed of representatives from the medical, dental, nursing and hospital associations, from welfare workers, and civic bodies to make a survey to determine the status of medical care in the State, particularly as regards the indigent and low income classes, and to perfect plans for medical care.
2. That the Medical Society of Virginia will see to it that the local county and city medical society will become the center of medical service within its territory; that it will admit to its membership only those physicians who, by character, equipment and skill, are capable practitioners.
3. That, for the same reason the State aids undergraduate study of medicine, so the State should be interested in carrying on graduate education, and should contribute to postgraduate education to the doctor through the two medical schools.
4. That every accredited physician should be a member of the staff of one or more of these accredited hospitals, practicing in and from the hospital; and as a corollary, hospital service should be taken to the patient's home just as far as it is practicable to do so in order to avoid over-hospitalization and increased costs.
5. That experiments with various plans for pre-payment of bills for medical and hospital care be continued by local medical societies. That in the formulation of these plans, the ten principles laid down by the American Medical Association in June, 1934,* be strictly observed and that time be given to evaluate the results of various experimental plans lest we adopt the evils present in all current forms of national health insurance.
6. Finally, that representatives of the State Society appear before each county society or its equivalent and present in substance the intent of the proposed bills for health insurance and determine the professional sentiment to guide us in our future action.

After a very general expression of opinion, one of the principal speakers being Dr. J. Shelton Horsley, a member of the Medical Advisory Board of President Roosevelt's Committee on Economic Security, the following substitute motion for the report of the Medical Economics Committee was adopted:

Resolved that the secretary of the Medical Society of Virginia be requested to write the National Committee on Economic Security that we desire to cooperate in every possible way with them provided always the control of the practice of medicine remain with the medical profession and divorced from every form of political control.

When the question was considered in the Council, Dr. Moncure moved, and this was seconded, that the report of our Medical Economics Committee be adopted rather than the substitute decided upon in the general meeting. Not knowing what action would be taken by the House of Delegates of the American Medical Association at its special meeting to be held on the 15th of February and as no bill had yet been presented to Congress in regard to sickness or health insurance, a substitute motion was offered that the whole question of sickness insurance be tabled until such time as the President of the Society sees fit to call a meeting of the Council to consider it again. The substitute motion carried.

The secretary was then instructed to send each councilor a copy of the resolutions prepared by the Medical Economics Committee and also a copy of the bill on sickness or health insurance when presented to Congress that they might bring this matter to the attention of the societies in their districts and get the consensus of opinion of the members.

There being no further business, the Council adjourned.

F. H. SMITH, *President* AGNES V. EDWARDS, *Secretary*.

*Ten Principles, *J. A. M. A.*, June 30, 1934, page 2220.

Report of Delegates to the American Medical Association

TO THE HOUSE OF DELEGATES OF THE MEDICAL SOCIETY OF VIRGINIA:

Your three delegates were all present at the first meeting of the House of Delegates of the American Medical Association in Atlantic City on the morning of June 10, 1935. They were all three present at each one of the subsequent meetings. The proceedings of these meetings will be published in the *Journal of the American Medical Association* in detail, and therefore, it is useless for us to report to you anything more than our general impressions of what occurred in the House of Delegates.

For the first time in the history of the American Medical Association, the Canadian Medical Association joined in the scientific meetings. The officers of the Canadian Medical Association were also introduced to the House of Delegates and attended some of the sessions of the same.

This year, for the first time, a Committee was appointed to investigate the various fields concerning birth control and contraceptives, and to report back at the meeting in 1936.

The question was raised as to whether the investigation of hospitals approved by the American Medical Association for the training of interns should not be done by the local County or State Medical Association instead of the American Medical Association. This was referred to a committee.

The Texas membership were very insistent that the United States Government be petitioned to use its influence to stop the dissemination of medical misinformation coming over the radio from Mexico.

Of course, the various problems concerning socialized medicine received full and frequent discussion. It is very evident that the American Medical Association intends to maintain its position as outlined in the ten articles promulgated at the called meeting of the House of Delegates in Chicago. It is also very evident that the sentiment was against the granting of medical licenses

to United States citizens who graduated from medical colleges abroad. Certainly it was evident that such men would not be allowed to practice in the United States without passing the State or National Boards.

President Bierring's address was an historical review of the American Medical Association for the past thirty-one years. He paid a lot of attention to the influence of the American Medical Association in guiding legislation in Governmental affairs.

The outstanding point of the secretary's report was the fact that the membership of the American Medical Association is now, for the first time, over one hundred thousand.

The House of Delegates went on record as opposed to a physician being an active member of more than one component part of the American Medical Association at the same time, that is for instance, a physician who is an active member of two different state societies at the same time.

All three of your Virginia delegates voted for Dr. J. Tate Mason, a native of our State and a graduate of the University of Virginia, for president.

All three voted for Chicago as the next place of meeting, but Kansas City was selected.

Respectfully submitted by

J. C. FLIPPIN, M. D.,
WRIGHT CLARKSON, M. D.,
HUGH H. TROUT, M. D., *Chairman.*

June 20, 1935.

Report of Executive Secretary-Treasurer

TO THE PRESIDENT AND MEMBERS OF THE HOUSE OF DELEGATES:

The Committees appointed by the President to take charge of the special affairs of the Society have accomplished excellent work. There has been no lessening in the amount of detail work at headquarters and we wish to thank our members for their cooperation at all times.

We are very grateful to Mr. George B. Zehmer, of the Extension Division of the University of Virginia, for the splendid assistance he has given the Society in the furtherance of its educational program, as executive secretary of the Department of Clinical and Medical Education. It is imperative to have additional funds to keep this feature to the high standard it has enjoyed in the past few years, and it seems possible that this may eventually be cared for in part if we can secure a trust fund as recommended by Dr. Bates in his report as chairman of the Committee to Administer the Trust Fund for Postgraduate Clinical Education.

There have been the usual membership changes with perhaps a few more losses due to financial conditions. Definite figures will be given at our meeting.

In accordance with action of the Council last Fall, charter was issued the Orange County Medical Society. This makes us have a total of fifty-two chartered societies representing eighty-nine counties and one city. Several of these are inactive, due to the limited number of doctors residing in some counties. On the whole, however, a much greater interest is manifested in medical matters in the State.

In February, at the special meeting of the House of Delegates of the American Medical Association, held for a consideration of the social and economic policies of the Association as related to pending and proposed legislation, sickness insurance, etc., our Society was represented by Dr. Warren F. Draper, Dr. J. C. Flippin, 1934 delegates as requested, and Dr. P. St. L. Moncure, alternate for Dr. Hugh H. Trout. The resolutions adopted at that meeting appeared on pages 717 and 718 of the March, 1935 issue of the MONTHLY. At the annual meeting of the American Medical Association in June, we were represented by our regularly elected delegates, Dr. J. C. Flippin, Dr. Hugh H. Trout, and Dr. Wright Clarkson.

The President appointed Dr. C. C. Coleman, of Richmond, to represent the Society at the Governor's Statewide Safety Conference held in Richmond in May.

Our financial status shows some improvement since last year as our budget was adopted with a view of living within expected receipts and an increase in the number of advertising pages in the MONTHLY has been of some assistance. Books will be audited after the close of our financial year—September 30th—and a detailed financial statement will appear in the minutes of the meeting in the December issue of the journal. In accordance with instructions from the Council, $1,500.00 of Government bonds, upon maturity, were re-invested in other Government bonds, though these are at a lower rate of interest. We have received several payments on the principal of the $1,000.00 bond held in trust which we were to receive if and when as much as 5 per cent of the principal was collected, and hope we may ultimately recover the full amount of the bond.

We wish to assure our members of our desire to be of service whenever occasion arises and trust we may all pull together in the coming year for the success of our organization.

AGNES V. EDWARDS,
Executive Secretary-Treasurer.

Report of the Publication and Program Committee

The Committee has met several times during the year and given its approval to the conduct of the MONTHLY —expressing among other things its pleasure over the decided increase in income which has been made possible through increased advertising.

Changes in the program for the annual meeting made last year seemed to be widely approved and the Committee has again followed in general the plans previously laid down.

J. H. NEFF,
H. A. TABB,
W. B. BLANTON, *Chairman.*

Report of Committee on Scientific Exhibits and Clinics

The Committee was notified of its appointment by Dr. F. H. Smith, the President of the Society, October 19, 1934. As in the past the Committee has carried on

its work chiefly by correspondence. No formal meetings of this Committee have been held. Dr. F. C. Rinker, of Norfolk, Va., was appointed local chairman of the Committee by the Society in Norfolk in May, 1935. In June, 1935, the Secretary of the Society sent out cards asking that those who wished to present scientific exhibits notify the Chairman of the Committee not later than August 20, 1935. At the end of that time three members of the Society had expressed their wish to present scientific exhibits and the Chairman of the Committee obtained one additional exhibit from the American Medical Association. This makes to date four scientific exhibits which will be presented. If the habit of past years continues there will no doubt be several additional applications for exhibits shortly before the time of the meeting. It is hoped, therefore, that the scientific exhibits will be a success.

The clinics have not been completely arranged for, but plans are under way for the holding of clinics by the invited guests of the Society and these will be completed at an early date.

The appropriation for the work of the exhibits will be turned over completely to the local chairman and it is hoped that it will be adequate for the expenses of arranging the exhibits. In the past it has usually been inadequate but the deficiency has been generously made up by the local Society at the place of meeting.

As in the past the Executive Secretary of the Medical Society of Virginia, Miss Agnes V. Edwards, has been invaluable in cooperating with this Committee.

Respectfully submitted,

J. D. WILLIS, M. D.,
J. L. Wright, M. D.,
C. B. MORTON, M. D., *Chairman.*

Report of Department of Clinical and Medical Education

The Department of Clinical and Medical Education conducted during the year four postgraduate lecture-clinics in the subject of Pediatrics, one each in South Boston, Christiansburg, Nassawadox and Norfolk. The services of Dr. Samuel F. Ravenel, Greensboro, N. C., specialist in Pediatrics were obtained to conduct the clinics in the first two centers while those of Dr. George M. Lyon, Huntington, W. Va., specialist in Pediatrics also, were secured to direct those in the remaining centers. In addition to these four clinics, three postgraduate clinics were conducted in cooperation with the Department by the Medical Schools of the State, two by the Department of Medicine of the University of Virginia and one by the Medical College of Virginia.

Forty-three physicians enrolled in the lecture-clinics conducted in extension, an average of approximately eleven physicians to a center, while 143 doctors attended the clinics conducted in the Medical Schools. In addition, sixteen physicians, although not regularly enrolled, attended from one to three sessions in the extension clinics. In all, the Department, with the help of the Medical Schools, actually gave postgraduate instruction to 202 members of the profession during the year.

The table that follows gives in detail facts, based on reports of the instructors and on questionnaire returns from physicians, concerning the four extension clinics. Most significant perhaps are the facts that of the thirty-one physicians attending the clinics who returned the questionnaire, twenty-eight stated that the lectures and discussions by the physicians were excellent, twenty-nine stated that the clinics were worth the time and money spent, and twenty-seven stated that they were interested in future courses. Of subjects suggested for future clinics, internal medicine was first in order with general medicine and gynecology next.

SUMMARY OF QUESTIONNAIRE RETURNS

Comunities in which clinics were held	South Boston	Christiansburg	Nassawadox	Norfolk	Totals
No. of physicians enrolled	12	11	12	8	43
Visitors (not enrolled but attending from 1 to 3 sessions)	4	4	3	5	16
No. replying to questionnaire	5	10	9	7	31
Were the lectures:					
excellent	5	10	8	5	28
good			1		1
fair					
passable					
poor					
Were the clinics:					
excellent		2	1	2	5
good	3	2	3	1	9
fair	1	6	2	1	10
passable	1		1		2
poor			1		1
Worth time and money:					
Yes	5	10	9	5	29
No				1*	1*
Features especially valuable:					
Lectures	1	4	1	1	7
Infant feeding	1	1	1	2	5
Common sense methods	1	3		1	5
"All"		1	3		4
Instructor	1		1	1	3
New methods of diagnosis and treatment		1		1	2
Review			1		1
Personal contacts with physicians			1		1
Frank discussions	1				1
Infections and preventive measures				1	1
Features especially weak:					
"None"	2	5	3	4	14
Time of meeting		1	1		2
Clinics		1	1		2
Lack of clinical material				1	1
Interested in future courses?					
No				1	1
Yes	5	10	7	5	27
Subjects:					
Any subject	3		1	4	8
Internal medicine		2	3	1	6
General medicine	1	2		1	4
Gynecology		3	1		4
Dermatology		1	1		2
Surgery		1			1
Dermatitis features		1			1
Medical ethics			1		1

Suggestions:

South Boston—
"More of the courses, possibly on the Minnesota plan."
"More clinical material."
"Keep it up."

Christiansburg—
"Improved clinics."
"None. Am entirely satisfied."
"Better attendance on the part of physicians."

Nassawadox—
"I hardly see how the clinics could have been improved unless we had had more clinical material."
"Important to select suitable hour of day."
"An excellent method for getting men in practice abreast of the times."

*Physician could not attend clinic after joining.

Norfolk—
"Season and hours not suitable. Fee too high."
"Less time spent on individual subjects so that more ground can be covered."
"Clinician should appear before local society before beginning clinic."

In an attempt to evaluate its work, the Department must observe that it faced not an easy task at the begining of the year. Approximately 80 per cent of the physicians who had enrolled in the postgraduate clinics in pre-natal and post-natal instruction conducted by the Society during the two previous years had asked for further courses. While the pre-natal and post-natal program had been rather handsomely financed by grants of approximately $9,000.00 annually by the Commonwealth Fund of New York City and of appropriations of $2,500.00 annually from the Medical Society of Virginia, the Department for the year covered by this report was assured of only the balance on hand from the previous year of some $600.00 and an appropriation of $250.00 by the Society. The Extension Division of the University of Virginia held out the hope for some assistance, not to exceed $500.00. And there was an undetermined amount to be derived from the enrollment fees paid by doctors joining the clinics. At the outside the Department could not anticipate a budget in excess of $2,000.00. Obviously the Department could not realize the desire to offer postgraduate instruction during the year to all of the physicians in the State who had expressed their intention of participating in future courses. Under the circumstances, it decided after thoughtful consideration that it could attempt to do no more than keep alive the idea of continuous training and the plan of postgraduate education that had been inaugurated by the Society. Even in the face of such an unpretentious program, the Department reluctantly decided, after conferring with one of the local societies interested in holding a clinic and receiving their generous approval of the proposal, to increase the individual enrollment fee for physicians from $5.00 to $10.00 in order to derive additional income to finance the few clinics anticipated. The Department expressed its interest in and approval of the postgraduate clinics conducted at frequent intervals by the two Medical Schools and voiced the hope that these institutions would continue uninterruptedly this form of postgraduate medical education.

The Department was also disturbed over the loss of its very efficient and industrious executive secretary, Mr. George W. Eutsler. Mr. Eutsler had proved himself a most valuable and ingenious assistant. His resignation was accepted in view of the fact that he had moved to Kingsport, Tenn., as the Director of the Holston Valley Community Hospital. Mr. George B. Zehmer, Director of Extension in the University of Virginia, was elected as his successor.

In view of the limited resources and the uncertainty of an exact budget, the Department authorized the new secretary, under plans which it outlined and which conformed closely to those adopted previously for the clinics in pre-natal and post-natal instruction, to conduct not less than two and no more than four clinics. The clinics were recommended in the subject of Pediatrics because of the fact that the majority of physicians requesting future courses had listed Pediatrics as their first choice. The Department appointed a committee consisting of Drs. Flippin and Sutton to select the clinicians. It recommended that the clinics insofar as possible be conducted in widely separated sections of the State. Among possible centers it suggested those of Abingdon, Christiansburg, Staunton, and Harrisonburg in the West, South Boston and Martinsville in the South, and Fredericksburg, the Eastern Shore, Norfolk, Newport News, Sussex and Petersburg in the East. The final decisions and results have been reported.

CONCLUSIONS AND RECOMMENDATIONS

Although the Department was limited in its resources and was unable to conduct but four extension clinics, a small number in comparison with the number conducted in previous years, it is encouraged by the results. The frank and enthusiastic replies from physicians convince the Department that practitioners in the State approve of the continuation of the plan of postgraduate instruction. "Good work!" "More of it!" are typical comments from physicians who attended the clinics. This encouraging note is emphasized also by the reports from the clinicians who have spoken and written most complimentary of the doctors who attended the clinics and most enthusiastically of the plan of instruction.

The Department feels that it was particularly fortunate in securing Drs. Ravenel and Lyon to conduct the lecture-clinics. They proved themselves ideally prepared from the point of view of training, experience, personality and interest. That their fitness was realized is attested by the reports from the physicians attending the courses.

The Department recommends that the Society adopt ways and means for continuing its program of postgraduate instruction, and for adapting and enlarging it from time to time as the interests of the physicians demand and as resources make possible.

There follows a financial report and a list of the names and addresses of physicians who enrolled in the clinics, those conducted in the medical teaching centers by the Medical Schools as well as those conducted in extension.

Respectfully submitted,

R. D. BATES, *Chairman.*

PHYSICIANS ENROLLED IN SOUTH BOSTON CLINIC

Dr. R. H. Fuller, South Boston, Va.
Dr. G. A. Stover, South Boston, Va.
Dr. C. B. White, Halifax, Va.
Dr. W. L. Williams, Brookneal, Va.
Dr. W. O. Tune, Brookneal, Va.
Dr. W. P. McGuire, Wylliesburg, Va.
Dr. J. A. Owen, Turbeville, Va.
Dr. J. D. Hagood, Clover, Va.
Dr. I. K. Briggs, South Boston, Va.
Dr. W. L. Eastlack, South Boston, Va.
Dr. D. C. Steelsmith, South Boston, Va.
Dr. W. C. Brann, South Boston, Va.

Visitors

Dr. P. W. Miles, Danville, Va.
Dr. H. C. Chalmers, Phenix, Va.
Two Nurses, Halifax County.

PHYSICIANS ENROLLED IN CHRISTIANSBURG CLINIC

Dr. A. M. Showalter, Christiansburg, Va.
Dr. Jack Porterfield, Christiansburg, Va.
Dr. C. F. Manges, Blacksburg, Va.
Dr. S. H. Nixon, Christiansburg, Va.
Dr. F. C. Bedsaul, Floyd, Va.
Dr. R. M. DeHart, Christiansburg, Va.
Dr. W. K. Lloyd, Christiansburg, Va.

Dr. John Giesen, Radford, Va.
Dr. S. J. Beeken, Cambria, Va.
Dr. S. A. Tuck, Pembroke, Va.
Dr. G. W. Morse.

Visitors

Dr. Saunders.
Dr. J. H. Woolwine.
Dr. T. H. Clark, Christiansburg, Va.
Dr. S. A. Draper, Pulaski, Va.

PHYSICIANS ENROLLED IN NASSAWADOX CLINIC

Dr. S. K. Ames, Cape Charles, Va.
Dr. C. E. Critcher, New Church, Va.
Dr. J. L. DeCormis, Accomac, Va.
Dr. H. L. Denoon, Nassawadox, Va.
Dr. W. T. Green, Cape Charles, Va.
Dr. J. R. Hamilton, Nassawadox, Va.
Dr. W. C. Henderson, Nassawadox, Va.
Dr. G. W. Holland, Eastville, Va.
Dr. J. W. Jackson, Machipongo, Va.
Dr. J. M. Lynch. Cape Charles Va.
Dr. E. H. Trower, Eastville, Va.
Dr. Rooker White, Keller, Va.

Visitors

Dr. C. M. Easter, Chincoteague Island, Va.
Dr. J. F. Edmonds, Accomac, Va.
Dr. A. F. Wood, Parksley, Va.

PHYSICIANS ENROLLED IN NORFOLK CLINIC

Dr. E. R. Altizer, Berkley, Va.
Dr. Blanchard, Roxobel, N. C.
Dr. A. M. Burfoot, Fentress, Va.
Dr. W. A. Hoggard, Hertford, N. C.
Dr. P. St. L. Moncure, Norfolk, Va.
Dr. J. R. Spencer, South Mills, N. C.
Dr. L. N. Simpson, Berkley, Va.
Dr. F. D. Wilson, Norfolk, Va.

Visitors

Dr. T. L. Brooks, Oceana, Va.
Dr. J. L. Rawls, Suffolk, Va.
Dr. Mullins, Norfolk, Va.
Dr. W. P. McDowell, Norfolk, Va.
Dr. W. L. Harris, Norfolk, Va.

PROGRAM

MEDICAL COLLEGE OF VIRGINIA CLINIC

April 29-30, 1935

Monday, April 29, 1935

Embolism of the Arteries of the Extremities.
Dr. Gunnar Nystrom, Uppsala University, Sweden.

Tuesday, April 30, 1935

Etiology and Prevention of Suppurative Diseases of the Lung.
Dr. I. A. Bigger, Professor of Surgery.
The Physicians Part in the Control of Venereal Diseases.
Dr. E. L. McQuade, Director of Rural Health Work, State Board of Health and Associate in Preventive Medicine.
Prevention of Communicable Diseases.
Dr. Lee E. Sutton, Jr., Associate Professor of Pediatrics.
Contraceptive Technique.
Dr. H. Hudnall Ware, Associate Professor of Obstetrics.
Convalescence from a Preventive Standpoint.
Dr. William H. Higgins, Professor of Clinical Medicine.
Dangers Incident to the Use of Certain Drugs.
Dr. Harvey B. Haag, Professor of Pharmacology.
Ward Rounds, or Outpatient Clinics, as desired
Round Table Discussion: Subject, Medical Economics. Discussion led by Dr. C. C. Coleman, Professor of Neurological Surgery.
Pulmonary Embolism.
Dr. Gunnar Nystrom, Uppsala University, Sweden.

PHYSICIANS ATTENDING

Dr. J. E. Raby, Tarboro, N. C.
Dr. J. F. Thaxton, Tye River, Va.
Dr. John Hundley, Lynchburg, Va.
Dr. J. O. Matthews, Clinton, N. C.
Dr. B. L. Quarles, Newport News, Va.
Dr. J. A. Rucker, Bedford, Va.
Dr. F. D. Wilson, Norfolk, Va.
Dr. Marshall Payne, Staunton, Va.
Dr. Harvie Baker, Norfolk, Va.
Dr. C. F. Manges, Blacksburg, Va.
Dr. W. C. Yeatts, Danville, Va.
Dr. S. E. Gunn, Hopewell, Va.
Dr. A. E. Turman, Richmond, Va.
Dr. D. M. Kipps, Front Royal, Va.
Dr. W. C. Caudill, Pearisburg, Va.
Dr. C. H. Iden, Berryville, Va.
Dr. G. C. Amory, Hilton Village, Va.
Dr. Grant Elliott, Orange, Va.
Dr. L. C. Haynes, Mt. Jackson, Va.
Dr. H. B. Dameron, Laurel, Md.
Dr. N. G. Wilson, Norfolk, Va.
Dr. H. W. Pritchett, Danville, Va.
Dr. P. W. Miles, Danville, Va.
Dr. J. J. Neal, Danville, Va.
Dr. R. H. Jones, Montgomery, W. Va.
Dr. O. F. Mitchell, Franklin, Va.
Dr. J. W. Wilkins, Mt. Owen, N. C.
Dr. J. H. Cutchin, Whitakers, N. C.
Dr. B. A. Hopkins, Stuart, Va.
Dr. F. T. Cassiday, Fredericksburg, Va.
Dr. N. B. Jeter, Covington, Va.
Dr. A. B. Sloan, Mooresville, N. C.
Dr. C. L. Neale, Fort Sam Houston, Texas.
Dr. R. H. Pretlow, Suffolk, Va.
Dr. W. J. Ozlin, South Hill, Va.
Dr. G. B. Robertson, Jackson, N. C.
Dr. B. W. Wilkinson, Clarksburg, W. Va.
Dr. J. W. Smith, Hayes Store, Va.
Dr. C. O. Dearmont, White Post, Va.
Dr. D. W. Ruffin, Ahoskie, N. C.
Dr. J. B. Ruffin, Ahoskie, N. C.
Dr. H. C. Odom, Ahoskie, N. C.
Dr. C. B. Bowyer, Stonega, Va.
Dr. Thos. F. Gill, Richmond, Va.
Dr. R. L. Raiford, Franklin, Va.
Dr. John W. Martin, Roanoke Rapids, N. C.
Dr. Ruth S. Mason-Grigg, Petersburg, Va.
Dr. J. M. Habel, Jetersville, Va.
Dr. F. P. Fletcher, Richmond, Va.
Dr. G. S. Fultz, Butterworth, Va.
Dr. Ennion Williams, Richmond, Va.

PROGRAM

UNIVERSITY OF VIRGINIA HOSPITAL CLINICS

Friday, November 16, 1934

Medical Clinic. Dr. J. C. Flippin.
Discussion.
Agranulocytosis. Dr. H. B. Mulholland.
Discussion.
Laboratory Diagnosis of Anemia. Dr. W. E. Bray.
Discussion.
Ward Rounds—
Orthopedics. Dr. R. V. Funsten.
Internal Medicine. Drs. J. C. Flippin and J. E. Wood.
Neurology and Psychiatry. Dr. D. C. Wilson.
Dermatology and Syphilogy. Dr. D. C. Smith.
Appendicitis in Children. Dr. W. H. Goodwin.
Discussion.
Round Table.

PHYSICIANS ATTENDING

Dr. R. E. Booker, Lottsburg, Va.
Dr. Frank Tappan, Berryville, Va.
Dr. Carroll Iden, Berryville, Va.
Dr. Charles Dearmont, White Post, Va.
Dr. A. E. Turman, Richmond, Va.
Dr. H. M. Wallace, Staunton, Va.
Dr. W. H. Turner, Round Hill, Va.
Dr. B. A. Rice, Forest, Va.
Dr. L. G. Roberts, Moorman's River, Va.
Dr. E. G. Scott, Lynchburg, Va.
Dr. J. O. Mundy, Charlottesville, Va.
Dr. John E. Cole, Fredericksburg, Va.
Dr. A. A. Sizer, Schuyler, Va.
Dr. C. W. Scott, Newport News, Va.
Dr. O. W. Carper, Front Royal, Va.
Dr. H. T. Hawkins, Waynesboro, Va.
Dr. A. F. Robertson, Staunton, Va.
Dr. W. A. Murphy, Staunton, Va.
Dr. W. H. Craig, Richmond, Va.
Dr. L. H. Apperson, Richmond, Va.
Dr. J. S. DeJarnette, Staunton, Va.
Dr. M. J. Payne, Staunton, Va.
Dr. Glenn C. Campbell, Staunton, Va.
Dr. H. F. White, Fishersville, Va.
Dr. H. J. Morton, Stuarts Draft, Va.
Dr. M. B. Jarman, Hot Springs, Va.
Dr. Jeanette M. Jarman, Hot Springs, Va.
Dr. F. D. Daniel, Charlottesville, Va.
Dr. Hunter Williams, North Garden, Va.
Dr. J. J. Waff, Shenandoah, Va.
Dr. B. F. Randolph, Arrington, Va.
Dr. D. E. Watkins, Waynesboro, Va.
Dr. Dan Nichols, Charlottesville, Va.
Dr. B. C. Shuler, Shenandoah, Va.
Mr. W. E. Hisey, Shenandoah, Va.
Dr. W. A. Kyger, Free Union, Va.
Dr. E. D. Davis, Stanardsville, Va.
Dr. Elizabeth Cole, Norfolk, Va.
Dr. C. M. Watson, Broadway, Va.
Dr. J. C. Harshbarger, Harrisonburg, Va.
Dr. A. H. Koppernd, Saskatchewan, Canada.
Dr. R. L. Miller, Mt. Solon, Va.
Dr. Wm. Jordan, Richmond, Va.
Dr. K. D. Graves, Roanoke, Va.
Dr. Anita Lotti, Charlottesville, Va.
Dr. Eleanor McCoy, Baltimore, Md.

Friday, May 10, 1935

Diagnosis and Treatment of the Commoner Affections of the Eye. Dr. H. S. Hedges.
Discussion.
Bronchiectasis. Dr. E. C. Drash.
Discussion.
Some Aspects of Renal Infection. Dr. J. H. Neff.
Discussion.

The Early Orthopedic Treatment of Poliomyelitis. Dr. Robert Funsten.
Discussion.
Ward Rounds.
Meningitis. Dr. W. W. Waddell.
Discussion.
Round Table.

PHYSICIANS ATTENDING

Dr. A. E. Turman, Richmond, Va.
Dr. S. G. Miller, Piney River, Va.
Dr. H. T. Hawkins, Waynesboro, Va.
Dr. W. C. Archer, Waynesboro, Va.
Dr. G. L. Morriss, Victoria, Va.
Dr. Elizabeth B. Sherman, Front Royal, Va.
Dr. D. M. Kipps, Front Royal, Va.
Dr. B. A. Rice, Forest, Va.
Dr. R. E. Booker, Lottsburg, Va.
Dr. E. M. Chitwood, Wytheville, Va.
Dr. Marshall J. Payne, Staunton, Va.
Dr. Alex. F. Robertson, Jr., Staunton, Va.
Dr. J. C. Coulter, Charlottesville, Va.
Dr. J. F. Thaxton, Tye River, Va.
Dr. H. M. Wallace, Staunton, Va.
Dr. H. L. Baptist, Ivy Depot, Va.
Dr. J. B. Bailey, Keysville, Va.
Dr. R. L. Hillman, Emory, Va.
Dr. Charles O. Dearmont, White Post, Va.
Dr. W. H. Turner, Round Hill, Va.
Dr. L. G. Roberts, Moorman's River, Va.
Dr. C. G. Grazier, U. S. Navy.
Dr. J. A. Wolfe, Staunton, Va.
Dr. G. B. Barrow, Staunton, Va.
Dr. Glenn C. Campbell, Staunton, Va.
Dr. Anita Lotti, Charlottesville, Va.
Dr. W. A. Kyger, Free Union, Va.
Dr. W. R. Warren, Woodberry Forest, Va.
Dr. E. D. Davis, Jr., Crozet, Va.
Dr. Lewis Holladay, Orange, Va.
Dr. J. F. Wright, Petersburg, Va.
Dr. Chas. W. Scott, Newport News, Va.
Dr. J. O. Mundy, Charlottesville, Va.
Dr. J. F. Hubbard, Waynesboro, Va.
Dr. Chas. E. Watson, Broadway, Va.
Dr. J. H. Scherer, Richmond, Va.
Dr. N. Bloom, Richmond, Va.
Dr. H. S. Daniel, Louisa, Va.
Dr. W. A. Murphy, Staunton, Va.
Dr. W. R. Martin, Charlotte Court House, Va.
Dr. H. B. Holsinger, Farmville, Va.
Dr. John E. Cole, Fredericksburg, Va.
Dr. F. T. Cassidy, Fredericksburg, Va.
Dr. Lee Cooke, Fredericksburg, Va.
Dr. C. C. Canada, Staunton, Va.
Dr. Percy Harris, Scottsville, Va.

FINANCIAL STATEMENT NOVEMBER 1, 1934—AUGUST 30, 1935

Receipts

Balance from committee on pre-natal and post-natal instruction	$ 562.55
Mississippi State Board of Health—Sale of manikin and supplies	149.00
Delayed enrollment fees Pre-natal and Post-natal Clinics 3 @ $5.00	15.00
Enrollment fees—South Boston Pediatric Clinic, 12 @ $10.00	120.00
Enrollment fees—Christiansburg Pediatric Clinic, 9 @ $10.00	90.00
Enrollment fees—Nassawadox Pediatric Clinic, 12 @ $10.00	120.00
Enrollment fees—Norfolk Pediatric Clinic, 8 @ $10.00	80.00
Attendance fees—Norfolk Pediatric Clinic, 3 lectures @ $1.00	3.00
Medical Society of Virginia	250.00
Extension Division	60.00
	$1,449.55

Disbursements

U. S. tax on two checks	$ .04
Dr. R. D. Bates traveling expenses committee meetings	4.20
Dr. P. W. Miles traveling expenses committee meetings	15.00
Dr. G. F. Simpson traveling expenses committee meetings	14.40
John Hopkins Press—Reports—studies in History of Medicine	3.00
Michie Co., Charlottesville, Printing letterheads, envelopes	15.00
Jarman's, Inc., Charlottesville, Printing Announcements	8.00
Dr. S. F. Ravenel, South Boston clinic	400.00
Dr. S. F. Ravenel, Christiansburg clinic	400.00
Dr. George M. Lyon, Nassawadox clinic	350.00
Dr. George M. Lyon, Norfolk clinic	230.00
	$1,439.64
Balance on hand	9.91

Paid by Extension Division

Geo. B. Zehmer, Executive-Secretary, traveling expenses	$ 16.03
Dr. J. C. Flippin, traveling expenses committee meetings	4.40
Michie Co., Charlottesville, printing Christiansburg announcements	7.75
Jarman's, Inc., Charlottesville, printing Nassawadox announcements	4.00
Jarman's, Inc., Charlottesville, printing Norfolk announcements	9.00
Telegrams, long distance calls	19.97
Business letter service, Huntington, W. Va.—cutting stencils Dr. Lyon's lectures	25.17
Dr. Geo. M. Lyon, balance on $700.00 for conducting Nassawadox and Norfolk clinics	120.00
	$ 206.32

Summary

Total Cost		$1,645.96
Contributed by		
Committee on Pre-natal and Post-natal Instruction	$726.55	
Physicians enrolling in clinics	413.00	
State Medical Society	250.00	
Extension Division, University of Virginia	266.32	
		$1,655.87
Balance on hand, September 1, 1935		$ 9.91

Report of Committee on Legislation

The Committee on Legislation has been active during the past year in National and State legislative matters and has communicated with our representatives in Congress in regard to these when occasion necessitated. However, there is no definite report to make at this time.

FRANK S. JOHNS, *Chairman.*

Report of Medical Economics Committee

The most important question under consideration by this committee has been the threat of the government, national or state, taking over the control of the practice of medicine, the present trend being in the direction of a national system of sickness insurance.

In an effort to obtain the considered opinion of the members of the Medical Society of Virginia a questionnaire was sent out to the entire membership. From the replies of nearly one-fourth of our members some interesting facts are shown. The tabulated results are shown in an Appendix.

Your committee has been unalterably opposed to any national form of sickness insurance, or to any other measures, leading toward governmental control of the practice of medicine. It is nevertheless realized by your committee that certain changes are desirable, particularly for the care of indigents and low income groups, and that if these changes can be made by the medical profession the threat of governmental control will be removed.

The following resolution is therefore offered.

Whereas, sickness insurance is being agitated and urged by various agencies; and

Whereas, some form of health insurance is one of the objectives of the President's Economic Security Committee, under the caption of "provision for meeting the economic risks of illness"; and

Whereas, it was the stated purpose of the President to submit a message to Congress on this subject shortly after March 1, 1935; and

Whereas, a particularly pernicious bill has been in-

troduced by the American Association for Social Security —the so-called Epstein Bill, which takes the control of medicine entirely out of the hands of physicians and places it in the hands of lay individuals:

Therefore, be it resolved, that the Medical Society of Virginia reaffirm its stand taken in 1933 of opposing any general scheme of group payment for medical care, and, especially, a policy of national health insurance, and that it further opposes any other measures leading toward government control of the practice of medicine for the reasons that:

1. It fails to deal with the essential problem, the relief of poverty.

2. It furnishes an inferior type of service which does not provide adequate medical care. This service becomes inferior for the reasons set out in Appendix, Note 2.

3. It does not further preventive medical care as the statistics of all countries show no change in mortality rates and a tremendous increase in sickness rates. Where cash benefits are provided the insured are more interested in these benefits than in the prevention of disease.

4. It entails enormous governmental expenditures and results in increased taxation.

5. It is a particularly evil form of paternalism and distinctly un-American.

Further, be it resolved, that the following steps be taken to insure adequate medical care to the citizens of Virginia:

1. That the Medical Society of Virginia adopt the Washington, D. C., plan, modified to suit rural as well as urban communities. (See Appendix, Note 3, for details.)

2. *Education of the Public*—

That following a suggestion from the Medical Society of the District of Columbia, the following resolutions be adopted and forwarded to the American Medical Association:

(1) That the American Medical Association undertake a publicity campaign on a national scale, using every available resource of magazine, newspaper, radio and popular forum, to acquaint the American people with the social and economic dangers inherent in the system of state controlled health insurance.

(2) That the American Medical Association intensify its efforts to instruct the members of the profession upon this general subject by maintaining a speakers' bureau to provide qualified speakers to participate in the programs of state and county societies upon invitation by such societies. And the Society of this State hereby invites the American Medical Association to take the initiative in providing such instruction to our membership in accordance with an orderly plan to cover our entire jurisdiction.

(3) That the American Medical Association use every available method to recognize and publicize the organized plans maintained by its component societies for the adequate distribution of medical service as the current response of the medical profession to popular needs.

3. *Improvement of the Quality of Medical Care:*

That, for the same reason the state aids undergraduate study of medicine, so the state should be interested in carrying on graduate education, and should contribute to postgraduate education taken to the doctor through the two medical schools.

4. That experiments with various plans for pre-payment of bills for medical and hospital care be continued by local medical societies. That in the formulation of these plans, the ten principles laid down by the American Medical Association in June, 1934, be strictly observed, and that time be given to evaluate the results of various experimental plans lest we adopt the evils present in all current forms of national health insurance.

APPENDIX

Note 1: Results of the Questionnaires upon the Problems of State Controlled Medicine:

Number of questionnaires sent out 1832
Number of replies received to August 10th ..... 433—23.63%
Failed to reply 76.37%
General practitioners replying ..... 266—61.43%
Specialists replying ..... 151—34.87%
Unclassified replies ..... 16— 3.69%
Counties represented in the replies—78.

(The list of counties and the number of physicians replying)

Accomac	8	Grayson	1
Albemarle	16	Halifax	2
Alleghany	10	Hanover	4
Amelia	3	Henrico	82
Appomattox	1	Henry	6
Arlington	7	Highland	1
Augusta	18	James City	1
Bath	1	King and Queen	1
Bedford	5	King William	1
Botetourt	4	Lancaster	1
Brunswick	2	Lee	4
Buckingham	2	Loudoun	4
Campbell	13	Louisa	1
Caroline	1	Lunenburg	2
Chesterfield	2	Madison	1
Charlotte	1	Mathews	1
Clarke	3	Mecklenburg	3
Craig	1	Montgomery	6
Culpeper	2	Nansemond	2
Cumberland	2	Nelson	2
Dinwiddie	12	Norfolk	32
Elizabeth City	3	Northampton	5
Fairfax	5	Nottoway	1
Fauquier	4	Orange	1
Floyd	2	Patrick	2
Fluvanna	1	Pittsylvania	8
Franklin	2	Prince Edward	6
Frederick	4	Prince George	3
Giles	1	Princess Anne	1
Gloucester	1	Prince William	1

Pulaski	2	Southampton	4
Rappahannock	1	Spotsylvania	3
Rockbridge	1	Tazewell	7
Rockingham	7	Warren	4
Roanoke	32	Warwick	14
Russell	3	Washington	8
Scott	1	Wise	9
Shenandoah	1	Wythe	6
Smyth	3	York	1

Do paupers and low-income patients suffer for lack of medical care in your community?

- Positive Replies 317—75.0%
  - Rarely 278—87.7%
  - Commonly 30— 9.4%
  - Usually 9— 2.8%
- Negative Replies 104—25.0%
- Suffering due to their own fault 221—51.0%
- Suffering due to professional fault 37— 8.5%
- Suffering due to relief agency fault 85—19.6%
- Suffering due to fault of all three 2— 0.5%

Do people complain of charges?

- All charges 345—79.7%
- Of General Practitioners 103—30.0%
- Of Hospitals 326—94.5%
- Of Specialists 321—93.0%

Is the complaint well founded? Yes—151—41%

Do hospitals, etc., usually take your advice what to charge? No—155

(Answer in many cases that advice was not asked or volunteered.)

Do you find any real demand for government controlled practice? Yes— 21— 5.0%

Do you yourself favor state or national government taking over the control of medical practice Yes— 10— 2.0%

In whole Yes— 4— 1.0%

In further part Yes— 39— 9.5%

Further use of state health officers Yes— 43—10.0%

Further use of state hospitals Yes— 84—19.4%

Increase of pauper physicians Yes— 98—23.0%

District almshouse hospitals Yes—116—27.0%

If not do you think any change from present customs, etc., should be made? Yes— 93—21.0%

What prevailing conditions should be changed and how?

1. Tax support (county, city, state, federal) for indigents in hospitals 91
2. Tax support (county, city, state, federal) for indigents medical treatment 46
3. Restriction of clinics (including health department) to indigents 48
   (10 specified immunization clinics)
4. Abolish practice of medicine by health department 9
5. Health insurance—Voluntary 31
   Health insurance—Compulsory 4
6. Lower costs for medical care (chiefly specialists and hospitals 26
7. Correction of abuses in management of relief (largely Federal) 18
8. Central credit and admitting bureau as in Washington, D. C. 8
9. Hospital insurance (under control of medical profession) 23
10. Public education as to costs and quality of medical care, and community responsibility for care of indigents 18
11. Outpatient departments for ambulant indigents 5
12. Compulsory auto-liability insurance 3
13. Restriction of number of medical students 3
14. Birth control (including sterilization) 3

Do you recommend any specific action by the M. S. Va.? Yes—175—40%

Opposition to Federal control 80

Society action to anticipate State Medicine 5

(Various changes specified above, or simply unqualified action)

Continued study and recommendation by committee 12

(Several advised appointment of a committee for this purpose)

Do you advise that representatives of the M. S. Va. actively combat for or against measures in the legislature? Yes—322—74%

Do you advise against doctors appearing in legislative committee rooms, etc.? Yes— 42—10%

Other steps not covered—included above.

From these facts the following conclusions may be drawn:

1. There is a certain amount of suffering, though occurring rarely, for lack of medical care which should be corrected.
2. Charges of hospitals and specialists should be lowered in low-income groups.
3. The large majority of the medical profession of Virginia is opposed to governmental control of medicine, and sees no real demand for it.
4. Some provision should be made for the payment of hospitals and physicians for the care of the indigent.
5. Clinics should be more strictly supervised and limited to the indigent.
6. While only 40 per cent of the members replying recommended some specific action by the Medical Society of Virginia, 74 per cent advocated legislative activity by representatives of our Society for or against measures in which doctors are interested.

Note 2:

a. Its actual control falls not into the hands of the medical profession but into the hands of bureaus, composed largely of non-medical perons—and such bureaus have become powerful political machines more concerned with the building up of power than with the character of the medical services provided for the insured.

b. It has done away with the intimate personal relationship between the patient and the physician and has substituted a feeling of suspicion and antagonism and so created an atmosphere in which in-

genuity, creative ability, leadership and satisfactory medical care have languished.

c. The quantity of minor and imaginary ailments produced which are not benefited by medical care, together with numerous reports, have so taken up the time of the examiners that the examinations have been hasty and superficial.

d. Where drugs have been provided, it has inevitably led to over-medication.

Note 3: A County Medical Service Bureau: (Patterned after the Washington, D. C., plan).

a. The city or county shall be regarded as the unit of medical service to be set up.

b. A city or county medical service bureau be created and incorporated as a non-stock, non-profitable corporation.

c. Membership in this bureau to be resricted to physicians who are accredited members of their county medical societies, or their equivalents, and dentists, nurses, pharmacists and hospitals likewise accredited be invited to join on an equal basis, thus to combine all agencies serving the sick.

d. A board of directors, with representation of all agencies participating, and of the Board of Supervisors and/or alternative relief agencies, be created, which board shall select an administrative and executive head of the bureau.

e. In order to create working capital, all members may be assessed a membership fee, and/or agree to donate fees collected through the bureau to a total of $----------.

f. The Board of Supervisors and/or other agencies for the care and relief of the poor shall have agreed to pay the bills of the indigent, when properly vouched for and certified by the bureau, according to a schedule of fees and charges prepared by the bureau and accepted by the relief agency, or agencies concerned. (This schedule should approximate one-half of the usual charges for office and home practice, and one-third of the usual hospital and specialists' fees.)

g. The bureau and its members shall not be concerned in any way until a person is, or claims to be, unable to pay the usual bill for services requested or rendered. Then, if the member chooses, he hands that person a card introducing him to the bureau. In so doing, the bureau member agrees to accept the terms made between the bureau and the applicant. Upon presentation of this card, the bureau executive uses all of his tact and judgment to persuade the applicant for services that his application is entirely honorable and respectable. In a sympathetic mannner, the executive learns and records, upon proper forms, all relevant facts pertaining to the applicant's ability to pay.

If the survey determines a complete inability to pay, the executive so certifies and the physician is notified that he is permitted to treat the patient on a pauper basis. The governmental agency will pay the bill when properly certified by the bureau according to the schedule.

If the applicant can pay something, he and the executive agree as to the amount and terms of payment. The applicant signs the agreement, pledging himself to abide by these terms.

Every effort shall be made to compel the individual to pay as agreed, but in any event the bureau agrees to pay 90 per cent of the specified amount. The bureau shall retain 10 per cent for its expenses and as a reserve fund against default of other accounts.

h. All members shall pledge themselves and their services to the extent of one visit in emergencies. This is necessary to prevent delay, and the physician must, therefore, depend upon the good faith of all concerned to take care of the cost of this visit.

i. Encouragement may be offered plans of placing contracts for hospitalization with those of low-income levels, upon the monthly payment basis, and hospitals of communities where such contracts are in demand are urged to encourage this effort at self-help.

Respectfully submitted,
ALEX. F. ROBERTSON, JR.,
M. H. HARRIS,
C. O. DEARMONT.

Report of Membership Committee

There have been the usual changes in membership during the past year, figures for which will be given by the Secretary. We have received no applications for membership from doctors not affiliated with component societies. Obituaries for the members who have passed on have appeared in the MONTHLY from time to time.

It is our pleasure to propose for honorary membership the name of our president, Dr. Francis H. Smith, in recognition of the excellent service he has rendered our Society during his term of office.

ISAAC PEIRCE,
A. W. HAMMOND,
J. A. WHITE, *Chairman.*

Report of Committee on Ethics

The Committee on Ethics has had no meetings during the year and therefore, has no formal report.

J. C. FLIPPIN, *Chairman.*

Report of Walter Reed Commission

The Walter Reed Memorial Commission begs leave to report that Belroi, the birthplace of the Hero, Dr. Walter Reed, is in good physical condition. There is an increasing interest manifested in the shrine by the profession and the general public. The building is open every day for inspection of the hundreds who visit it, and it is hoped that many of the members of the Medical Society of Virginia will take the opportunity to visit Belroi en route to the meeting in Norfolk.

There is nothing the Commission asks at present of

the Society save a continuance of the fire insurance protection which is at present covered on the building.

Respectfully,

CLARENCE PORTER JONES, *Chairman.*

Report of Committee on Group Societies

As this Committee expended all of the funds that could be spared by its members during the preceding year, and the Society did not make a sufficient appropriation for its necessary expenses, it has been impossible for its work to be carried on.

The Committee hopes and believes that the organizing of the doctors in each county (for business purposes only) will be continued. It would recommend that each such organized society in each group be permitted to have a representative in the House of Delegates.

Your Committee has urged the group societies to encourage this arrangement of a separate organization (for business purposes) in each county, and has also urged upon the Woman's Auxiliary to the State Society to arrange for a corresponding branch in each county to cooperate with the local medical organization.

Your committee would urge that an appropration be made to continue and strengthen this plan of organization.

The time has come when it is *vitally necessary,* if the medical profession is to continue to exist as a power for good, that every doctor in every county shall be "organized" and every woman member of the doctor's family shall be a member of the local auxiliary.

With such an organization in each county, each state and the entire nation, our profession will be able to withstand successfully every dangerous onslaught.

Let us then be up and doing!

J. A. GRIZZARD,
J. M. HOLLOWAY,
D. M. KIPPS,
SOUTHGATE LEIGH, *Chairman.*

Report of Advisory Board to the Woman's Auxiliary

The President of the Medical Society of Virginia and the three members of the Board, after due consideration, decided to prepare papers on some phases of medicine which they believe will aid the Auxiliary in getting a clear understanding of such important subjects as state medicine, group hospitalization, social insurance, and economic insurance, which includes compulsory health insurance, unemployment insurance, old-age and widows' and orphans' pensions—all of which are of vital importance to women. These papers we hope will be ready for the fall meeting of the Auxiliary.

In state medicine and group treatment we must ever keep in mind that any method which lowers the quality of medical services to a large part of the citizens of a nation does serious injury to the whole nation. Preventive medicine is peculiarly fitted to government control, while the care of the sick is entirely unsuited to it. In other words, "The health of the community is a community problem, but the healing of the sick is a very personal matter." The human touch in medicine is something that transcends all legislation and state control can never supplant the sympathetic human bond that exists between the family doctor and his patient.

In Alexandria, at the annual meeting last Fall, I heard with keen interest the excellent reports of both the Virginia president, Mrs. William Lett Harris, and the president of the American Medical Association, Mrs. R. W. Tomlinson. All of the Auxiliaries are working along the lines of health education, school examinations, radio talks, etc. With forty-three states organized, having a membership of nearly 16,000 intelligent women, I am sure the Auxiliaries will prove a strong and valuable support to the medical profession of this nation.

It was my pleasure to go with Dr. F. P. Fletcher, president of the Richmond Academy of Medicine, when he was introduced to our local Auxiliary last spring and to say a few words of encouragement to the good wives of our Richmond doctors, who stand ever ready to help us professionally as well as socially.

J. ALLISON HODGES, *Chairman.*

Report of Committee to Administer Trust Fund for Postgraduate Clinical Education

As there are no funds in trust to administer, this committee has had no meeting.

It would be of great value to the Society and to the medical profession as well to accumulate such a fund, so that the interest might be used to help with the work of postgraduate education which the Society has been doing for several years. In order that a trust fund be of any material value for this purpose, it would be necessary for it to be of sufficient size for the interest to amount to something. It is suggested, therefore, that small sums might be contributed from time to time by those interested in the future of the Society. A number of small sums, say of even five dollars, would soon make a large sum, and there are some who might be able to give much larger amounts.

Unless some progress is made along this line your Committee is about as functionless as the vermiform appendix.

Respectfully submitted,

R. D. BATES, *Chairman.*

Report of Child Welfare Committee

For the Child Welfare Committee consisting of Dr. L. T. Royster, University; Dr. F. D. Wilson, Norfolk; Dr. Chas. E. Conrad, Harrisonburg; Dr. R. D. Bates, Newtown; Dr. J. Bolling Jones, Petersburg; Dr. J. B. Stone, Richmond; Dr. E. M. Chitwood, Wytheville, and myself, I wish to make the following report:

This Committee, together with committees from the Virginia Tuberculosis Association, The Virginia Pediatric Society, The Cooperative Education Association of Virginia, Parents and Teachers, The Virginia Education Association, and the State Superintendents Association, organized on April 3rd with the idea of coordinating their efforts, and formed the *State Child Conservation Committee.* At this meeting it was pointed out that among the states of the nation, and particularly among the Southern states in regard to health measures affect-

ing directly the welfare of mothers and children as well as the protection of all citizens, Virginia was not maintaining her place. Five outstanding problems to which the attention of this group was drawn were:

1. Correction of certain remediable physical defects of indigent school and pre-school children: viz; defective vision, diseased tonsils and adenoids, defective teeth and immunization.
2. Better facilities for the early diagnosis and early treatment of tuberculosis.
3. Better obstetrical service.
4. Venereal disease control.
5. Provision for a continuous postgraduate service to Virginia practicing physicians.

Committees were then appointed to consider these problems and to report their recommendations at a subsequent meeting.

At the next meeting held June 1st, these committees made their reports. Briefly some of those findings are as follows:

1. Virginia has the third highest death rate from tuberculosis in the Southern states. Virginia is not keeping up the average rate of decline in this death rate; and virtually all the states, including the Southern states, are cutting down this death rate much faster than Virginia. Owing to the scarcity of available and free beds, the slow intake of patients at the sanatoria, and the slow "turnover" of patients at the sanatoria, active tuberculosis cases in large numbers, untrained, and without proper medical care, continue to spread infection for the perpetuation of our problem.
2. According to estimates, there are approximately 150,000 persons in the State infected with venereal diseases and about 50,000 new infections occurring each year, 30 per cent of which are probably innocently acquired. The State has no funds appropriated for a definite State program for control of this disease, though a large proportion of State-supported defectives are the direct result of this disease.
3. The Virginia Commission for the Blind estimates that 75,000 children in the State have eye defects needing the care of competent specialists, which if untreated, will result in many instances in total blindness, and serious handicaps educationally and vocationally.
4. Conservative studies indicate that there are 10,000 children in our schools in serious need of tonsil-adenoid operations, who cannot pay for these operations. Among these, and also those having defective vision are a large percentage unable to advance in school. Authoritative studies show that many of these "repeaters" in school are repeaters because of these remediable handicaps. They constitute an additional heavy financial burden on the school system of the State.

The joint committee hopes to improve at least a part of these existing conditions by informing as thoroughly as it can the citizens of Virginia concerning these facts, and requesting the State Legislature at its next Assembly to appropriate such funds as they think advisable for carrying out this plan.

A very cordial interview has been held with the Governor who is very much interested. In the next few months, we hope through the different committees to bring this before as many individuals and groups of individuals represented in the various organizations as is possible to do. During that time the different component medical societies of the State will probably be requested to present this to their members.

In this way we hope to obtain the active interest and support of as many of the people of Virginia as can be had to help bring Virginia to her rightful place among the states in the conservation of the health of her citizens. This active support will reflect upon the Legislature and make it easier for them to make such appropriations if they know it is the will of their constituents.

These problems have received serious consideration and study with the consumption of much time and effort. The various committees have been very cooperative and have given their time with pleasure and with the hope that results will justify the efforts that have been put forth.

Respectfully submitted,
W. P. JACKSON, *Chairman.*

Public Health Statistics

I. C. RIGGIN, M. D.
State Health Commissioner of Virginia

The communicable disease reports received at the office of Dr. G. F. McGinnes, State Epidemiologist, for the month of August and for 1935 through August, show the following cases compared with the same periods in 1934.

	1935	*1934*	*Jan.-Aug. 1935*	*Jan.-Aug. 1934*
Typhoid and Paratyphoid Fever	190	139	485	437
Diphtheria	91	68	548	673
Scarlet Fever	77	100	1,245	1,341
Measles	61	163	17,924	27,829
Meningitis	12	5	209	83
Poliomyelitis	279	25	586	43
Rocky Mountain Spotted Fever	11	15	34	41
Typhus Fever	2	0	6	3
Undulant Fever	3	3	28	21
Tularaemia	8	3	36	24
Smallpox	0	0	10	4

In reviewing the morbidity figures through August, 1935, in comparison with the same period in 1934, the most striking fact is the great increase in poliomyelitis and meningitis this year.

Of the former disease little need be said for no one in the State of Virginia can be unaware of the increased prevalence of this disease in the summer of 1935 and the subsequent decline in the early fall. It is probable that next year the number of cases reported may be slightly above the average annual number.

Of meningitis the same cannot be said. The increased prevalence this past winter was not due to a general outbreak in the State but to a large number of cases in camps and institutions where there was an unusual concentration of men. With the continuance of the C.C.C. camps and the transient camps in the State it is to be expected that the morbidity rate for meningitis will continue higher than in previous years. Barracks provide such fertile ground for the growth and spread of this disease!

From all indications, particular care must be taken this winter in handling rabbit meat and making sure that it is well cooked. The incidence of tularaemia has declined steadily since 1932 and it is hoped that the low level of 1934 can be maintained. However, with the exception of January and June, there have been more cases reported every month so far in 1935 compared with the same months last year. Though the peak of this disease is not until December, it can do no harm to heed the warning in the present figures and take precautions to keep the prevalence of this disease down. Since the convalescence from tularaemia is slow and the patient rarely returns to full-time work in less than two or three months, it is to the interest of every individual to be very careful about handling raw rabbit meat, particularly with open abrasions on their hands. With proper precautions in handling the meat and thorough cooking, tularaemia can be avoided.

Concerning the other diseases little of note can be said. The great decrease in measles is only the expected drop after the 1934 peak in the three or four year cycle of the disease. The slight drop in diphtheria, scarlet fever and Rocky Mountain Spotted Fever is probably chance as is the corresponding increase in typhoid and paratyphoid, typhus, undulant and smallpox. These differences are not likely to prove significant.

Woman's Auxiliary to the Medical Society of Va.

President—MRS. JOSEPH BEAR, 3012 Monument Ave., Richmond.
President-elect—MRS. FLETCHER J. WRIGHT, Petersburg.
Recording Secretary—MRS. JAMES B. STONE, 2042 Park Ave., Richmond.
Corresponding Secretary—MRS. AMBROSE MCGEE, 4107 Kensington Ave., Richmond.
Treasurer—MRS. REUBEN F. SIMMS, 2034 Park Ave., Richmond.

Invitation to Annual Meeting in Norfolk, October 15, 16 and 17, 1935.

It is indeed a pleasure to announce the Thirteenth Annual Convention of the Women's Auxiliary to the Medical Society of Virginia.

Every member should make an effort to attend and deem it a privilege, for in that city, October, 1922, our Auxiliary came into being.

To Dr. and Mrs. Southgate Leigh, of Norfolk, and Dr. and Mrs. J. Allison Hodges, of Richmond, our official organizers, and to Mrs. William Lett Harris, of Norfolk, recent past president, are we indebted for leadership and interest. They have successfully guided us through these years.

Our Guests of Honor will be Mrs. Rogers N. Herbert, Nashville, Tenn., and Mrs. J. Bonar White, Atlanta, Ga., Presidents of the National and Southern Medical Associations, who will address us at the Auxiliary Luncheon.

The hostess Auxiliary has arranged an interesting program for your entertainment and I trust the Business Meeting as outlined, followed by the luncheon, will induce you to attend in large numbers.

In behalf of the Woman's Auxiliary to the Medical Society of Virginia, I extend a most cordial invitation to all doctors' wives, daughters and mothers, regardless of whether affiliated with the Auxiliary, to attend our "Thirteenth Birthday Celebration."

Shall look forward with keen interest to a large representation from all sections of the State.

(MRS. JOSEPH) KATE C. BEAR, *President.*

PROGRAM
Thirteenth Annual Meeting
Monticello Hotel
Norfolk, Virginia **October 15-16-17, 1935**

Every woman attending the Convention is cordially invited to attend these meetings.

Tuesday, October 15

Registration 5:00 to 8:00 P. M. at the Monticello Hotel.

Every woman is requested to register immediately upon arrival.

8:00 P. M.—Opening meeting of the Medical Society of Virginia at Monticello Hotel.

Wednesday, October 16

8:00 A. M.—Registration Booth open. Monticello Hotel.

9:00 to 10:00 A. M. — Pre-Convention Board Meeting. Monticello Hotel.

All County Presidents, Presidents-Elect, Vice-President (where there is no President-Elect) and State Officers and Chairmen are expected to be present.

10:15 A. M. to 1:00 P. M.—GENERAL ANNUAL MEETING at Monticello Hotel.

President presiding—Mrs. Joseph Bear, Richmond.

Invocation—Mrs. T. Elmore Jones, Portsmouth.

Address of Welcome—Mrs. Eugene Lowenberg, Norfolk.

Response—Mrs. J. Allison Hodges, Richmond.

Report of Committee on Arrangements—Mrs. Southgate Leigh, Norfolk.

Roll Call of County Auxiliaries—Mrs. J. B. Stone, Richmond.

In Memoriam—

Minutes of Twelfth Annual Meeting—Recording Secretary, Mrs. J. B. Stone, Richmond.

President's Report—Mrs. Joseph Bear, Richmond.

President's Announcements.

Reports:

Corresponding Secretary—Mrs. W. Ambrose McGee, Richmond.

Treasurer—Mrs. Reuben F. Simms, Richmond.

State Chairmen:

Organization—Mrs. Fletcher J. Wright, Petersburg.

Program and Health Education—Mrs. C. C. Smith, Norfolk.

Finance—Mrs. James K. Hall, Richmond.

Legislation—Mrs. T. W. Murrell, Richmond.

Public Relations—Mrs. F. J. Wampler, Richmond.

Hygeia—Mrs. Herbert Jones, Petersburg.

Press and Publicity—Mrs. W. T. Sanger, Richmond.

Printing—Mrs. Reuben F. Simms, Richmond.

Courtesy—Mrs. M. N. King, Norfolk.

Exhibits—Mrs. H. M. Snead, Petersburg.

Jane Todd Crawford—Mrs. F. P. Barrow, Jr., Portsmouth.

Archives and Historian—Mrs. J. Allison Hodges, Richmond.

Parliamentarian—Mrs. Lee E. Sutton, Richmond.

County Presidents:

Mrs. Harold W. Potter, Newport News, Auxiliary to Warwick County Medical Society.

Mrs. B. E. Hunt, Hampton, Committee to Elizabeth City County Medical Society working with Warwick County Auxiliary.

Mrs. A. G. Shetter, Richmond, Auxiliary to Richmond Academy of Medicine.

Mrs. Philip Jacobson, Petersburg, Auxiliary to Postgraduate Medical Society.

Mrs. Eugene Lowenberg, Norfolk, Auxiliary to Norfolk County Medical Society.

Mrs. Hawes Campbell, Venter, Auxiliary to Mid-Tidewater Medical Society.

Mrs. J. P. Clark, Lynchburg, Auxiliary to Lynchburg Academy of Medicine.

Mrs. A. M. Sneed, Toano, Auxiliary to James City-New Kent County Medical Auxiliary.

Mrs. Llewellyn Powell, Alexandria, Auxiliary to Alexandria Medical Society.

Mrs. R. W. Woodhouse, Virginia Beach, Auxiliary to Princess Anne County Medical Society.

Delegates:

Woman's Auxiliary to American Medical Association

Mrs. Benj. A. Doggett, Norfolk.

Mrs. C. J. Devine, Norfolk.

Woman's Auxiliary to Southern Medical Association

Mrs. W. Abrose McGee, Richmond.

Unfinished Business.

New Business.

Reports:

Committee on Resolutions.

Committee on Credentials—Mrs. M. N. King, Norfolk.

Nominating Committee—Mrs. J. Allison Hodges, Richmond.

Election of Officers.

1:30 P. M.—Auxiliary Luncheon at Country Club (subscription). Honoring Mrs. Rogers N. Herbert and Mrs. J. Bonar White.

Cars will be at Monticello Hotel for transporation to luncheon.

Greetings:

Dr. F. H. Smith, President of the Medical Society of Virginia.

Dr. James W. Hunter, President of Norfolk County Medical Society.

Dr. P. St. L. Moncure, President-elect of Medical Society of Virginia.

Chairmen and Members of the Advisory Council:
Dr. J. Allison Hodges, Richmond.
Dr. Southgate Leigh, Norfolk.
Dr. Hugh H. Trout, Roanoke.

Addresses:

Mrs. Rogers N. Herbert, Nashville, Tenn., President of Auxiliary to American Medical Association.

Mrs. J. Bonar White, Atlanta, Ga., President of Auxiliary to Southern Medical Association.

Installation of Officers conducted by Mrs. Lee E. Sutton, Richmond.

Presentation of Gavel.

Address of President—Mrs. Fletcher J. Wright, Petersburg.

Adjournment.

Drive through the Naval Base immediately following luncheon.

5:00 P. M.—Tea at Colonial House, Bank and Freemason Streets.

8:30 to 9:30 P. M. — Post-Convention Board Meeting at Ghent Club. Mrs. Fletcher J. Wright, Petersburg, presiding.

10:30 to 12:30—Reception, Informal Dance and Buffet Supper at Ghent Club.

Thursday, October 17

1:00 P. M.—Oyster Roast at Croonenberg's Lynnhaven Bay (subscription).

Auxiliary Luncheon, Wednesday, 75 cents.
Oyster Roast, Thursday, $1.50.
Tickets obtainable at Registration Desk.

Meeting of Auxiliary to Southern Medical Association.

The Woman's Auxiliary to the Southern Medical Association will meet in St. Louis, Mo., November 20 and 21. All women attending the Southern Medical Association meeting are invited to the Auxiliary meetings.

Each State Auxiliary is entitled to send its President, two delegates and two alternates.

Members and eligible members of County Auxiliaries in these states, are very cordially invited to attend the luncheon meeting Wednesday, November 20 at 12:30 P. M., and the Annual Meeting, November 21 at 9:30 A. M. The business sessions are to be conducted on a schedule, allowing time for social arrangements. For the development of the Auxiliary, it is important for members and eligible women to be present, because the foundation of an organization rests on its membership and future leaderships come from it.

So make your plans now to go to this Convention. Program data will be sent you very soon.

Respectfully,

MRS. LEE W. ROE,
Chairman of Press and Publicity,
Woman's Auxiliary, Southern Medical Association.

Truth About Medicine

In addition to the articles previously enumerated the following have been accepted by the Council on Pharmacy and Chemistry of the A. M. A.:

Parke, Davis & Co.

Diphtheria Toxoid—P. D. & Co., one 0.5 c.c. vial package.

Diphtheria Toxoid—P. D. & Co., one 5 c.c. vial package.

Diphtheria Toxoid, Alum Precipitated—P. D. & Co., one 0.5 c.c. vial package.

Diphtheria Toxoid, Alum Precipitated—P. D. & Co., one 5 c.c. vial package.

E. R. Squibb & Sons

Iodobismitol with Saligenin (Squibb).

ACCEPTED DEVICES FOR PHYSICAL THERAPY

The following apparatus have been accepted by the Council on Physical Therapy of the American Medical Association for inclusion in its list of accepted devices for physical therapy:

Camp Supports.—The following supports are available: Visceroptosis Supports, Prenatal Supports, Postnatal and Postoperative, Hernial Supports, Sacro-Iliac Supports, Mammary Gland Supports, Lumbosacral and Dorsolumbar Supports. These garments are available in corset departments of selected department stores, certain corset shops, and reliable surgical supply houses. The garments are sold to patients on the prescription of a physician and his directions are followed when the fit is made. These belts and supports have been investigated in clinics and found to meet satisfactorily the therapeutic claims made for them. S. H. Camp & Co., Jackson, Mich.

PROPAGANDA FOR REFORM

Siroil.—The Bureau of Investigation reports that "Siroil" is a "patent medicine" sold on the mail-order plan by the Siroil Laboratories, Inc., of Detroit. According to the advertising, Siroil is "a positive relief for psoriasis," and the sufferer from this disease is told: "No matter how difficult or longstanding your case may be, Siroil will give you surprising relief." Psoriasis is frequently among the most intractable skin diseases with

which the dermatologist is confronted, and yet it is well known by medical men that many cases of psoriasis clear up in a remarkable way with treatment. However, the likelihood of recurrence is ever present. Because of the many inquiries the Bureau of Investigation has received regarding Siroil, the Chemical Laboratory of the American Medical Association was asked to analyze the preparation. According to the Laboratory's report Siroil consists essentially of an unbleached mineral oil roughly 16 parts, water about 3 parts, glycerine approximately 1/5 part, and 1/10 part of each phenol and sodium chloride (salt), and 1/10 part of a saponifiable material and beeswax. Enthusiastic reports have been received regarding the use of Siroil. On the other hand, a Philadelphia woman writes that after using Siroil "A rash is beginning to appear on my body." A Pennsylvania physician reports that a psoriasis patient of his used Siroil and "developed an eruption on the neck, face and hands characteristic of dermatitis venenata." Another physician reports that a patient of his used Siroil and "developed a severe rash wherever it came in contact with her skin." In other words, the letters to the Bureau of Investigation reflect what one would expect to be the opinions on a preparation of this character: Siroil occasionally helps, occasionally harms, and frequently does neither one nor the other. (J. A. M. A., July 27, 1935, p. 299.)

Book Announcements

Names of Surgical Operations. Compiled and arranged by the Western Surgical Association, through its Special Committee. Edited by CARL E. BLACK, A. M., M. D., Jacksonville, Ill. Forewords by Robert B. Greenough, William J. Mayo, William Darrach, C. Jeff Miller, George W. Crile, Robert S. Osgood, J. Shelton Horsley, Harry S. Gradle, Malcolm T. MacEachern, Urban Maes, and Emmet Rixford. Saint Paul. Bruce Publishing Company. 1935. Octavo of 102 pages. Cloth. Price, $3.00.

Five years ago the Western Surgical Association appointed a committee to simplify and standardize the names of surgical operations. This committee sent the names of 3,313 surgical procedures listed in Dorland's Medical Dictionary to the members of the Western Surgical Association and eliminated all names which did not receive the approval of at least 20 per cent of the members. All personal names as applied to operations were eliminated. The result is a list of 743 operations which may be qualified in twenty-three different ways as outlined at the bottom of each page upon which the classification appears. The actual classification occupies less than one-fourth of the space in the book. The remainder of the pages are devoted to preface, forewords, introduction, statement and explanation of the compilation, an illustration of the method of elimination, memoranda, various appendices and an index.

When a reviewer finds himself at variance with the Western Surgical Association and the eleven surgeons who wrote the forewords of this volume it is hard to escape the conclusion that he is in error. Nevertheless, he feels that much has been lost by eliminating the personal names associated with many operations. It is only just that the pioneers who devised time-tested procedures should be remembered by and identified with their contributions to surgery. Certainly the student will be less stimulated to review the history of surgery or to remember the relative merits of a Billroth I and Billroth II resection if he is unable to find the equivalent operation listed in the classification.

Be that as it may, this thin volume represents an enormous amount of painstaking work and the committee is to be commended for the practical method followed in the selection. There undoubtedly is a need for a reference book of this character and "Names of Surgical Operations" not only fills the present requirements but will also serve as a guide for subsequent classifications.

HARRY J. WARTHEN, M. D.

The Mortality From Cancer and The Mortality From Tuberculosis. Being Monographs I and II in Studies of the Experience Among the Industrial Policyholders of the Metropolitan Life Insurance Company, 1911-1930. Metropolitan Life Insurance Company, Home Office—New York. Pamphlets of 91 and 47 pages, respectively.

Economic Problems of Medicine. By A. C. CHRISTIE, M. S., M. D., Professor of Clinical Radiology, Georgetown University Medical School; President, Fifth International Congress of Radiology, etc. New York. The Macmillan Company. 1935. Octavo of 242 pages. Cloth. Price, $2.00.

This book should make a strong appeal to the physician at this time when economic problems are so pressing and when so many schemes threaten to change the customs developed through centuries of professional life. Dr. Christie speaks not only with the authority of one who has studied these problems as a member of the Committee on the Costs of Medical Care but also with the wisdom gained from large experience in private practice.

He reviews the ethics of the profession and lays stress on the right of the patient to have "free choice of physician." The over-supply of physicians in this country is convincingly shown and no

relief is in sight unless the medical schools by concerted action reduce the number of students. The cost of hospitalization is a large part of our medical bill so insurance to pay this bill is warmly advocated. The importance of organization is recognized and physicians are urged to intelligently interest themselves in their societies. Physicians have always gladly cared for the indigent but this burden has become so great that compensation for at least a part of this work is due the profession. Compulsory health insurance schemes are reviewed and it is clearly shown that any compulsory insurance premium is in fact a tax and leaves less available for the tax bill which seems to be mounting steadily. The development of Workmen's Compensation Laws is discussed and the unfavorable action of the earlier laws is attributed to the fact that physicians had no part in writing them. We are warned against further legislation in which our organizations have no part. The new methods of providing medical care are briefly set forth, many of them are commended, particularly the Alameda County (Calif.) and the Detroit plans. He describes the recently organized Washington Plan which has many advantages not found under insurance principles. He feels that some changes are necessary in the present methods of providing medical care but should be made carefully and patiently. The book closes with these sentences: "Progress will be greatly accelerated if there is cooperation between the socially minded forces outside the medical profession on the one hand and the medical profession on the other rather than the condition which prevails too largely at present of working at cross purposes. It should not be too much to ask in the light of past accomplishments that the leadership of the profession be accepted and its plans forwarded."

The book is recommended as a valuable contribution to this important subject.

CARRINGTON WILLIAMS, M. D.

New and Nonofficial Remedies, 1935. Containing Descriptions of the Articles Which Stand Accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1, 1935. Cloth. Price, $1.50. Pp. 510. Chicago: American Medical Association, 1935.

In this book the Council on Pharmacy and Chemistry lists and describes the medicinal preparations that it has found acceptable for general use by the medical profession. A glance at the list of the Council members and the long list of consultants appearing in the first part of the book gives ample warrant for the authority of the Council's selections.

Not only does the Council "accept" new preparations but from time to time it omits those which have been accepted but which have not with the lapse of time upheld their original promise of therapeutic merit.

A valuable feature of the book is the grouping of preparations in classes. Each of these is introduced by a general discussion of the group.

Physicians who wish to know why a given proprietary is not described in New and Nonofficial Remedies will find the "Bibliographical Index to Proprietary and Unofficial Articles not Included in N. N. R." of much value.

Annual Reprints of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1934, with the Comments That Have Appeared in The Journal. Cloth. Price, $1. Pp. 135. Chicago: American Medical Association, 1934.

Each succeeding volume of reports of the Council reveals more of the long and successful fight in the interest of rational therapeutics. Most of the "unacceptable" reports in this volume are concerned with products that may have some merit but are not offered to the public in a way which experience has taught the Council is necessary before a therapeutic agent is acceptable.

Illustrative of the Council's efforts to keep those concerned informed of the basis for its actions are the "Recent Revisions or Elaborations of the Council's Rules of Interest to Manufacturers and the Medical Profession," which have appeared in the last two volumes. These inform the profession of the various problems which arise and the care given to their consideration.

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Editorial

Where is Nursing Education Taking Us?

It goes without saying that the doctors of Virginia are deeply concerned over the proposed changes in nursing education. These changes are dealt with in general terms in Miss Smith's article which appears elsewhere in this issue of the MONTHLY. They are said to have been even more minutely aired before a recent joint meeting of doctors, nurses, and hospital superintendents. But up to this writing no statement with the stamp of authority upon it has been made concerning the precise nature or extent of the proposals.

From what has been written elsewhere and from what appears to be the temper of those who control the destiny of nursing in this State it is not difficult to guess in what direction changes will be attempted. The extent of the changes will probably be determined by the reaction they occasion.

The theory at work seems to be that we need better educated nurses and fewer of them. It is believed that by raising the standards of nursing education both ends will be achieved. One can imagine any sort of program worked out along these lines—a high school education, two years of college, a college degree by way of preliminary education. As for the nursing course itself, is it to be two, three or four years? How is it to be further revamped? More classroom hours of course, and more subjects in the curriculum to boot. Immediate expansion to include the social sciences, hygiene, and sanitation. There is hardly any limit to the amount of interesting information which those who are busily revamping nursing curricula cannot advance as eligible subjects for teaching.

Do doctors want it? Probably few doctors appreciate the full significance of such proposals. Many physicians have for years maintained that for the average case not even as much training as is at present given is necessary. Doctors think of nurses as sickroom attendants, assistants who are trained to follow the physician's orders and who by kindness, strength, cheerfulness, tact, and a reasonable amount of knowledge are prepared to make patients comfortable, measure out a little medicine, and otherwise contribute to the care of the patient. They do not expect to find in nurses the medical knowledge of a fellow practitioner. They are a little leary of a type of nursing education which makes graduates just wise enough to prove troublesomely counseling to their patients. Not only does the doctor fear the "over educated" nurse, but he is equally alarmed over the prospect of finding so few nurses left in the profession that their services will be more difficult to secure than at present. He does not have to jog his memory to recall instances in which the nurse summoned to a case must first know its nature, its expected duration and its geographical location. He cannot help wondering what

other conditions will be imposed by a more independent, small and highly educated coterie of nurses.

Do the people want it? Perhaps the pleasure of having very efficient and highly educated young women about will appeal to some people. Women with easy manners and soft voices, personable women who can talk about travel and books, and who have the gift of reading aloud, entertainingly. But will they wish to pay for such luxuries? For certainly so much additional time spent on nursing education cannot go unrecompensed, and besides there is an economic law which will assure more pay for fewer nurses—the old law of supply and demand.

Do the hospitals want it? It has been said that should the changes in nursing education which some are said to be contemplating be put into immediate effect, practically every private training school in Virginia would have to close its doors. The cost of maintaining a nurses' training school, with a curriculum broadened to the proposed extent and in which didactic courses have been multiplied to the exclusion of a large part of practical hospital service represents a financial burden few private hospitals could carry. It must be apparent that this type of training has been until now something of a barter business. At small or no expense at all nurses are given their training and education in exchange for services to hospital patients. For women without resources this has been the only way of supplying the great demands for nurses in this country in recent years.

Do nurses themselves want it? Do they realize that many who are now bearing the heat and burden of the day might not even qualify for admission to the new type of training school? That many might not make the grade? That the "superior nurse" of the future is going to displace her as an antiquated article? How many nurses actually feel the need of better training in meeting the routine problems of their professional day? Does the average nurse share the sentiments of a few upper stratum women who are bent upon elevating the whole profession to a new dignity through higher educational standards?

After all, is there not a better solution to the problem? We need a few well-educated, superiorly-trained women to occupy various positions in hospitals, training schools and in administrative office. For them the State university and the school attached to the Medical College of Virginia might give training of the character proposed with perhaps opportunity for postgraduate study or specialization. But for the average young woman desiring to enter nursing, may not the present system, with improvements here and there (improvements designed to improve and not to wreck) still serve the useful purpose to which it has been long dedicated?

A Specialist Visits Virginia.

A. B. has none too much of this world's goods. This may be because he is a farmer and lives in a remote section of Virginia. This would be bad enough but with declining years, those degenerative diseases to which we all are heir have begun to manifest themselves. Worst of all his eyes have begun to fail. He has cataract.

A few weeks ago A. B. was seated on his front porch contemplating the probabilities of a good tobacco crop and wondering over the decrees of Providence which seemed to have predestined him to an old age of blindness, when unexpectedly a stylish-looking automobile turned into his gate and drew up before his door while someone within inquired if there was not a man living there suffering from cataract. The stranger was a smartly dressed man with a professional air and his companion was no less impressive. In a few words he identified himself as an eye specialist from Baltimore. He had been passing through the county, he said, and heard that there was a man with cataract in the neighborhood who was needlessly losing his sight for want of proper attention. Being an expert in this type of eye affliction, especially in the operative treatment of the disease, the stranger felt duty bound to proffer his services to one in such distress. A. B. was naturally mystified but delighted at this sudden change in fortune and readily assented when the specialist from Baltimore proposed to remove the cataract then and there.

Things were soon made ready. While the assistant bustled around, the doctor put some sharply smarting drops into the eyes, dexterously manipulated some instruments and in due course produced what he exhibited as a typical cataract. A bandage was applied to the eye, and A. B. was assured that on the morrow it might be removed and, presto, he

would be able to see as well as ever. And, *mirabile dictu,* there need be no after care, for following a dexterous removal such as had just been performed there was no necessity for post-operative treatment.

For such kindness A. B. was moved to offer some compensation. Of course it had to be small. The specialist then spoke with seeming reluctance upon the subject of fees. He had operated upon many wealthy people and received some handsome returns. His usual charges ran into the hundred of dollars. But in a situation like this he was loath to ask more than fifty dollars. A. B. thought this very magnanimous. He rummaged through his cash box, but could raise only twenty-five dollars. The specialist quickly solved the difficulty by suggesting that if the ring worn by his sister were thrown into the bargain they might call it square. So possessed of twenty-five dollars and a ring worth equally much, the specialist and his assistant drove away.

Denouement. The next day bright and early A. B. lifted the bandage from his eyes, eagerly anticipating a new world full of all the beauties perfect vision so lavishly bestows. Disillusionment. There was no new vision. Just the same old dim hazy outlines, the same veil that had been daily increasingly shutting out the world. Then for the first time A. B. sought medical consultation concerning his eyes and the work of the Baltimore specialist. The family physician after a careful examination reported cataract in both eyes still present—only a little redness of the conjunctiva, the result of irritants used the preceding day. As for the Baltimore specialist no one else remembered to have seen him, nor was he ever seen or heard of afterwards.

President's Message

The Annual Meeting.

TO THE MEMBERS OF THE MEDICAL SOCIETY OF VIRGINIA:

I wish to remind you that the Annual Meeting of your Society is near at hand. I hope we are to have a well-attended meeting. Norfolk is an ideal place to meet. The Program Committee has prepared a most interesting program, designed especially to meet the wish of the general practitioner that he be given something practical to help him with his problems.

Please try to arrange to attend the opening session, the evening of the 15th. On that evening we shall hear from Dr. A. C. Christie, of Washington, D. C., a student and an author of a book on "Economic Problems of Medicine." This is the burning question of the hour, one that all physicians should be informed upon. Our other guest, Dr. James E. Paullin, of Atlanta, Ga., is to speak on Wednesday evening. His subject—The Significance and Diagnostic Importance of Pain in Disease—should also have a wide appeal. I hope that both of these speakers will have large audiences to hear them.

But my special appeal is to those of you chosen to represent your local Societies in the House of Delegates. Weighty questions are to be considered, important decisions made at this meeting. The House should be strictly representative, its decisions should faithfully reflect the majority view of the profession of the State of Virginia. This result cannot be achieved unless your Society is represented. If, therefore, it prove impossible for you to attend, see that your alternate does so; and if neither of you can do so, be sure another man is appointed and that he attend. The Medical Society of Virginia cannot be stronger than its House of Delegates. Yours is the responsibility.

Expecting, then, to meet you in Norfolk,

Fraternally yours.

F. H. SMITH, *President*
Medical Society of Virginia.

Proceedings of Societies

The Postgraduate Medical Society

Held a sectional meeting in Emporia, August 27th. Due to the absence of the president, Dr. H. E. Whaley, of Victoria, the meeting was presided

over by the first vice-president, Dr. J. A. B. Lowry, Crewe.

Dr. H. B. Holsinger, of Farmville, presented a very instructive paper on "Alpha Streptococcus in Relation to Peptic Ulcers." Dr. Warren T. Vaughan, of Richmond, and Dr. C. E. Martin, of Emporia, spoke on "The Medical Treatment of Chronic Arthritis with Case Report." Drs. L. S. Early and W. A. Reese, of Petersburg, spoke on "Complete Recovery in a Case of Fracture of the Spine with Total Paralysis." The final paper on the program was on Rocky Mountain Spotted Fever" by Dr. W. B. McIlwaine, of Petersburg.

The physicians of Greenesville County elected delegate and alternate to the next meeting of the Medical Society of Virginia, following which dinner was served in the hotel dining room.

The next meeting will be in Petersburg on the afternoon of Tuesday, November 12th.

The Fairfax County Medical Society,

At its meeting in August, re-elected the following officers for the coming year: President, Dr. Jessie T. Scott, Vienna; vice-president, Dr. William Meyer, Herndon; treasurer, Dr. F. M. Brooks, Fairfax Station; and secretary, Dr. E. S. Waring, Fairfax. Delegate and alternate to the Norfolk meeting of the State Society were also elected at this time.

The Southside Virginia Medical Association

Convened in Burkeville at Piedmont Sanatorium on September 10th. The meeting was called to order by the president, Dr. S. E. Gunn, and opened with prayer by Dr. B. B. Bagby. There was a good attendance present.

There were several interesting papers presented and all were freely discussed. Interesting cases were also reported by Drs. S. E. Gunn, H. M. Snead and Fowlkes.

In the absence of the secretary, Dr. R. L. Raiford, his son Morgan Raiford acted as secretary pro tem.

After a most delightful dinner served by the Hospital Staff, the meeting adjourned to meet in Petersburg on the second Tuesday in December.

News Notes

On to Norfolk!

The Medical Society of Virginia is holding its sixty-sixth annual meeting in Norfolk, October 15th, 16th and 17th, under the presidency of Dr. F. H. Smith, of Abingdon. The Monticello Hotel is to be headquarters and all sessions and exhibits will be there.

Business matters of importance will be discussed in the House of Delegates and all component societies are urged to see that they have representation. Names of delegates and alternates should be sent to the Society's office at 1200 East Clay Street, Richmond.

Adding to the interest of the scientific program will be the papers by our guests, Dr. A. C. Christie, of Washington, D. C., on "The Answer of the Medical Profession to State Medicine," and Dr. James E. Paullin, of Atlanta, Ga., on "The Significance and Diagnostic Importance of Pain in Disease."

Several scientific and a number of commercial exhibits will be on display. We hope all members attending the meeting will visit these exhibits as they will be well worthwhile.

A Golf Tournament will be held on Tuesday, the 15th, at the Norfolk Golf Club. Play begins at 10:00 A. M. and will be followed by lunch at the Club. All who propose to play are asked to send or bring their official handicaps from their local clubs. Drs. Claiborne Willcox, Medical Arts Building, and M. B. Savage, Wainwright Building, are in charge of the tournament.

Members are urged to bring their wives and daughters as the local Auxiliary is planning lovely entertainment for them. Among other things there will be a reception, informal dance and buffet supper on Wednesday evening and the men are invited to this.

At the close of the meeting on Thursday, there will be an oyster roast for the men and women.

This is being made a subscription affair because of the action of the Council, several years ago, in eliminating entertainments by the local societies.

Altogether, this is to be an excellent meeting and you will feel fully repaid for attending.

Don't forget Norfolk for October 15th, 16th and 17th. Come early and stay late as there is something of special interest for each day.

Delegates to Norfolk Meeting.

A number of societies have not sent in names of their delegates and alternates and as we want one hundred per cent representation, please send in your names to the Secretary of the Society, 1200 East Clay Street, Richmond, at once.

Following is the list of names received to time of going to press:

Delegate	*Society*	*Alternate*
	ACCOMAC	
Dr. J. W. Robertson		Dr. J. L. DeCormis
	ALBEMARLE	
Dr. Percy Harris		Dr. J. C. Flippin
Dr. W. E. Brown		Dr. A. D. Hart
	ALEXANDRIA	
Dr. James W. Love		Dr. W. B. Wilkins
	ALLEGHANY-BATH	
Dr. J. M. Emmett		Dr. Thomas Winn
Dr. M. B. Jarman		Dr. S. P. Hileman
	AMELIA	
Dr. J. M. Habel		Dr. H. C. Rucker
	AUGUSTA	
Dr. T. R. Rolston		
	BEDFORD	
Dr. E. L. Johnson		Dr. H. R. Hartwell
	DANVILLE-PITTSYLVANIA	
Dr. I. C. Harrison		Dr. P. W. Miles
	ELIZABETH CITY	
Dr. R. H. Wright, Jr.		Dr. E. S. Jones
	FAIRFAX	
Dr. F. M. Brooks		Dr. J. T. Scott
	FAUQUIER	
Dr. H. L. Townsend		Dr. H. C. Grant
	FREDERICKSBURG	
Dr. R. J. Payne		Dr. F. C. Pratt
Dr. C. A. Nunnally		Dr. W. A. Harris
Dr. J. M. Holloway		Dr. L. L. Lee
	HALIFAX	
Dr. J. D. Hagood		Dr. W. C. Brann
	HANOVER	
Dr. A. E. Murray		Dr. Edwin Vaughan
	JAMES CITY-NEW KENT	
Dr. A. M. Sneed		Dr. J. R. Tucker
	LOUDOUN	
Dr. G. H. Musgrave		Dr. W. C. Barr
	LYNCHBURG ACADEMY	
Dr. F. O. Plunkett		Dr. D. P. Scott
Dr. E. G. Scott		Dr. John Hundley, Jr.
	MECKLENBURG	
Dr. W. W. Wilkinson		Dr. A. T. Finch
	MID-TIDEWATER	
Dr. R. R. Hoskins		Dr. E. T. Sandberg
Dr. J. W. Smith		Dr. J. D. Clements
Dr. W. P. Jones		Dr. H. F. Hoskins
Dr. W. S. Cox		Dr. R. D. Bates
Dr. W. E. Croxton		Dr. M. H. Harris
Dr. J. R. Parker		Dr. M. H. Eames
Dr. J. N. DeShazo		Dr. J. M. Gouldin
Dr. L. O. Powell		
	NANSEMOND	
Dr. O. R. Yates		Dr. J. L. Rawls
	NELSON	
Dr. F. M. Horsley		Dr. E. C. Kidd
	NORFOLK	
Dr. W. B. Martin		Dr. N. G. Wilson
Dr. C. C. Smith		Dr. C. L. Harrell
Dr. Wm. L. Harris		Dr. F. H. Redwood
Dr. J. W. Hunter		Dr. F. D. Wilson
Dr. J. D. Collins		Dr. J. W. White
	NORTHAMPTON	
Dr. J. M. Lynch		Dr. W. J. Sturgis
	NORTHERN VIRGINIA	
Dr. C. H. Iden		Dr. Frank Tappan
Dr. J. E. Harris		Dr. P. W. Boyd
Dr. George Long		Dr. J. E. Amiss
Dr. C. H. Armentrout		Dr. J. G. Brown
Dr. D. M. Kipps		Dr. C. E. Foley
Dr. H. W. Miller		Dr. Marshall Wingfield
	PATRICK-HENRY	
Dr. W. C. Akers		Dr. B. A. Hopkins
Dr. J. M. Shackelford		Dr. C. R. Titus
	POST-GRADUATE	
Dr. J. A. B. Lowry		Dr. J. M. Hurt
Dr. H. C. Jones		Dr. G. S. Fultz
Dr. O. L. Jones		Dr. S. E. Gunn
Dr. B. J. Atkinson		Dr. J. B. Kiser
Dr. W. C. Harman		Dr. F. N. Mallory
Dr. T. F. Jarratt		Dr. W. D. Prince
Dr. H. B. Showalter		Dr. Robert Whitehead
Dr. F. E. Steere		Dr. W. W. Seward
	PRINCESS ANNE	
Dr. L. H. Hancock		Dr. R. W. Woodhouse
	RICHMOND ACADEMY	
Dr. Carrington Williams		Dr. J. S. Horsley, Jr.
Dr. F. P. Fletcher, Jr.		Dr. Lee E. Sutton, Jr.
Dr. A. I Dodson		Dr. T. N. Barnett
Dr. T. Dewey Davis		Dr. B. B. Jones
Dr. C. M. Caravati		Dr. L. J. Whitehead
Dr. J. F. Geisinger		Dr. A. E. Turman
Dr. Turner Shelton		Dr. R. A. Nichols, Jr.
Dr. P. D. Lipscomb		Dr. T. B. Washington
Dr. S. A. Anderson, Jr.		Dr. M. O. Burke
	ROANOKE ACADEMY	
Dr. J. T. McKinney		Dr. H. J. Hagan
Dr. C. H. Peterson		Dr. G. M. Maxwell
Dr. F. A. Farmer		Dr. T. D. Armistead

Delegate	*Society*	*Alternate*
	ROCKBRIDGE	
Dr. H. R. Coleman, Jr.		Dr. Frank Leech
	ROCKINGHAM	
Dr. Charles Watson		Dr. C. E. Conrad
	SOUTHWESTERN VIRGINIA	
Dr. J. C. Motley		Dr. P. S. Smith
Dr. G. A. Wright		Dr. T. K. McKee
Dr. E. M. Chitwood		Dr. C. F. Graham
Dr. Joseph Coates		Dr. B. F. Eckles
Dr. A. B. Woolwine		Dr. F. T. Hauser
Dr. D. S. Divers		Dr. R. H. Woolling
Dr. A. M. Showalter		Dr. J. L. Early
Dr. J. G. Cox		Dr. R. R. Goad
Dr. W. C. Caudill		Dr. M. C. Newton
	WARWICK	
Dr. C. P. Jones		Dr. David Blechman

The Virginia Pediatric Society

Will hold a luncheon meeting at the Monticello Hotel, Norfolk, during the time of the State Society meeting. The time set for this meeting is at 1:00 P. M., Wednesday, October 16th, and all pediatricians are urged to attend as the matter of re-organization will be considered.

Dr. W. P. McDowell, Norfolk, is president and Dr. Ambrose McGee, Richmond, is secretary.

Dinner Meeting.

Virginia members of the American College of Physicians will hold a dinner meeting in Norfolk, on Wednesday evening, October 16th, from 6:00 to 8:00 P. M., during the time of the meeting of the Medical Society of Virginia. Members will receive notice of this from Dr. J. Morrison Hutcheson, Richmond.

Dr. J. Shelton Horsley,

Richmond, chairman of the Virginia Section of the American Society for the Control of Cancer, is giving a luncheon in Norfolk, October 16th, at 1:00 P. M., to the District Chairman of that Society. At this time, there will be a discussion of cancer education and control and Dr. J. W. Cox, field representative of the American Society, will be among those present.

Married.

Dr. Frank Read Hopkins and Miss Nancy Scott Adams, both of Lynchburg, Va., September 14th.

Dr. Lawrence Paul Jones, North Emporia, Va., and Miss Emily Layfield Kitchin, Courtland, Va., August 19th.

Dr. Paul Hogg, class of '33, Medical College of Virginia, now of New York City, and Miss Dorothy Elizabeth Williams, Norfolk, Va., September 21st.

Dr. Edward Franklin Bland, an alumnus of the University of Virginia, class of '27, and Miss Frances Poinier, Winchester, Mass., September 7th. Dr. Bland is now living in Boston, Mass., and is on the staffs of the Massachusetts General Hospital and the House of the Good Samaritan.

Dr. Herman Harrison Braxton, Chase City, Va., and Miss Ann Norfolk Grimm, Baltimore, Md., recently.

Dr. Beverly Wilkins Nash and Miss Frances Lucille Bowers, both of Timberville, Va., September 1st. Dr. Nash is a member of the class of '32, Medical College of Virginia.

Lt. Col. George E. Barksdale,

Medical Reserve, U. S. Army, formerly of Richmand, was recently retired as Surgeon of the U. S. Veterans Bureau, at Asheville, N. C. He and Mrs. Barksdale have just returned from a tour of Europe, Asia and Africa, and will in the future reside at Cockamouth Farm, near Richmond, Va.

Dr. Fred G. Pegg,

Class of '34, Medical College of Virginia, who later interned at Protestant Hospital, Norfolk, Va., has located for general practice at 1226 Waughtown Street, Winston-Salem, N. C.

Medical College of Virginia News.

Dr. John E. Davis has accepted a position as instructor in physiology here. Dr. Davis came to us from the University of Chicago.

Dr. Ernst Fischer will join the faculty as associate in physiology in October. Dr. Fischer has been connected with the University of Rochester, school of medicine.

Dr. Rolland J. Main, assistant professor of physiology, has returned from Chicago where he has been doing research work with Dr. Carlson and Dr. Ivy since February.

Mr. J. A. Reese, associate in pharmacy, has accepted a fellowship at the University of Florida, where he will work on his master's degree.

Dr. Walter E. Vest, of Huntington, W. Va.; Dr. L. H. Justis, of Littleton, N. C., and Dr. R. E.

Caldwell, of Portsmouth, Va., were recent visitors to the college.

The ninety-eighth session of the college opened September 18th with an approximate enrollment of six hundred and eighty-two students in all schools. Convocation was held at 12:00 noon with classes starting at two o'clock.

The outpatient department for the month of August showed 5,856 patient visits made by 2,611 individual patients.

Dr. W. D. Kendig, of Kenbridge, a member of the Board of Visitors, was a college visitor recently.

Dr. L. Nelson Bell,

Class of '16, Medical College of Virginia, who is connected with the American Southern Presbyterian Mission at Tsingkiang-pu, Ku., China, is now on furlough and making his headquarters at Waynesboro, Va. While in America, Dr. Bell plans to do postgraduate work in surgery.

Dr. W. L. Gannaway,

Recently of Crockett, Va., has moved to Abingdon, Va., where he is located at West End Pharmacy.

Promotions in Public Health Service.

Dr. William S. Bean, Jr., and Dr. Thomas B. H. Anderson, both of the class of '14, University of Virginia, have been promoted and commissioned as Senior Surgeons in the Regular Corps of the U. S. Public Health Service.

American Public Health Association.

The annual public health meeting—the center of health activities, the place where first announcements are made of new discoveries, of research in progress, of new approaches to old problems, and of improved techniques in established health practices—will open in Milwaukee, Wis., on October 7th and continue to the 10th. The program is filled with scientific highlights. More than 400 presentations of health topics will be given.

Dr. E. L. Bishop, Knoxville, Tenn., President, will address the first general session on October 7th. Announcement will also be made at this time of the Sedgwick Memorial Medal Award. Dr. Walter H. Brown, Palo Alto, Calif., is the president-elect.

To Study Under Fellowships.

Dr. Edward M. Holmes, assistant epidemiologist to the Virginia State Department of Health, Dr. J. C. Neale, health officer of Henrico County, and Dr. Robert E. Hollowell, district health officer of the Valley District, will spend the winter in Baltimore, Md., where they will take up special work at the Johns Hopkins School of Public Health and Hygiene on fellowships from the Rockefeller Foundation.

Dr. James N. Greear, Jr.,

An alumnus of the University of Virginia, Department of Medicine, now residing in Washington, D. C., was elected president of the recently organized Washington Ophthalmological Society.

Southern Medical Association.

The twenty-ninth annual meeting of this Association is to be held in St. Louis, November 19th-22nd, under the presidency of Dr. H. Marshall Taylor, Jacksonville, Fla. This is the first time in the history of the Association that a meeting has been held in Missouri, and it should be one of unusual interest.

Mr. C. P. Loranz, Empire Bldg., Birmingham, Ala., is secretary of this Association.

Dr. A. H. Deekens,

For some time of Richmond, Va., has opened offices for general practice at Kilmarnock, Va.

The American Associations of Obstetricians, Gynecologists and Abdominal Surgeons

Held its annual meeting at Sky Top, Pa., the middle of September, under the presidency of Dr. M. Pierce Rucker, of Richmond, Va. This meeting had the largest attendance in its history and an excellent scientific program. The subject of Dr. Rucker's presidential address was "The History of Obstetrics and Gynecology in Virginia."

Dr. Louis E. Phaneuf, Boston, Mass., succeeded to the presidency at this time and the following officers were elected: President-elect, Dr. James W. Kennedy, Philadelphia; vice-president, Dr. Frederick H. Falls, Chicago; secretary, Dr. James R. Bloss, Huntington, W. Va.; assistant secretary, Dr. L. A. Calkins, Kansas City, Mo.; and treasurer, Dr. Lewis F. Smead, Toledo Ohio. It was voted to have the mid-winter clinical meeting at Toledo in March and the annual meeting at Bretton Woods, N. H., in September, 1936.

Dr. M. Melvin Clark,

Associated for several years with Dr. Thomas Wheeldon, Richmond, has moved to Rochester, N. Y., where he will be engaged in orthopedic surgery. His offices are at 315 Alexander Street.

Dr. W. R. Rogers,

Bristol, Va., has been re-elected mayor of that city for a two-year period. He is at present city coroner and has been serving an unexpired term as mayor since February 19, 1934.

Dr. Walter Joseph Otis,

New Orleans, La., an alumnus of the Medical College of Virginia, was among the diplomates who was qualified in both psychiatry and neurology at the initial meeting of the American Board of Psychiatry and Neurology, held recently in Philadelphia.

Drs. McCastor Working Abroad.

Drs. Joseph and Mary McCastor are continuing postgraduate work in Vienna, as voluntary assistants in the 1st Chirurgische Abteilung of the Allgemeines Krankenhaus under Prof. Dr. Hans Finsterer, the famous abdominal surgeon. As much of the surgery as possible is done under local anesthesia. Dr. Joseph McCastor graduated from the Medical College of Virginia in 1927 while his wife, Dr. Mary McCastor, recently graduated abroad.

Dr. M. H. Mund

Has located for general practice in the Dew Building, Covington, Va. He was formerly located in West Virginia.

Recent Acquisitions to the Library of the Medical College of Virginia.

These books may be obtained upon application to the Library, the only charge being return postage:

Adams, E. W.—A review of certain aspects of a recently recognized disease of the blood (agranulocytosis or agranulocytic angina).
Baldwin, M. E.—Diet—and like it.
Bell, E. T.—Textbook of pathology.
Bentley and Cowdry—A study undertaken by the Committee on Psychiatric Investigations.
Boyd, T. A.—Research.
Cameron—Essentials of tissue culture technique.
Cameron, D. E.—Objective and experimental psychiatry.
Corlett, W. S.—Medicine man of the American Indian and his cultural background.
Cushing, H. W.—Intracranial tumors.
Dale, Sir H. H.—Huxley Memorial lecture, 1935.
Dalrymple—Champneys Report on supervision of milk pasteurizing plants.
Du Bois, W. E. B.—Black reconstruction.
Duke-Elder—Practice of refraction.
Duke-Elder—Textbook of ophthalmology.
Dunbar, H. F.—Emotions and bodily changes.
Faries, J. C.—Limbs for the limbless.
Goldthwait, J. E.—Body mechanics.
Gradwohl, R. B. H.—Clinical laboratory methods and diagnosis.
Gruenberg, B. C.—Science and the public mind.
Industrial Hygiene League of Nations, 2 vols.
Kanner, Leo—Child psychiatry.
Kemp, H. W.—How to practice medicine.
Kessler, H. H.—The crippled and the disabled.
Krause, A. C.—The biochemistry of the eye.
Luckiesh, M.—Artificial sunlight.
Magie, W. F.—A source book in physics.
Matthews and Shallcross—Partners in plunder.
Mayer, E.—The curative value of light.
Miller, R. H.—Tuberculosis of the lymphatic system.
Millikan, R. A.—Electrons, protons, photons, neutrons and cosmic rays.
The nervous breakdown, by the Editors of *Fortune*.
Nuzum, F. R.—The span of life as influenced by the heart, the kidneys and the blood vessels.
Organic Syntheses, Vol. 15.
Paget, Stephen—For and against experiments on animals.
Palmer, B.—Paying through the teeth.
Paton, D. M.—The interaction of the lymph and blood glands.
Patterson's American educational directory, 1935 edition.
Petrullo, V.—The diabolic root.
Riesman, D.—The story of medicine in the Middle Ages.
Seabrook, Wm.—Asylum.
Springstun, H.—Doctors and juries.
White—Autonomic nervous system.
Wohl—Bedside interpretation of laboratory findings.
Worcester, A.—The care of the aged, the dying and the dead.
Wyler, E. J.—On serological tests for syphilis with very small amounts of patient's serum.

Dr. Luther B. Lowe,

Class of '34, Medical College of Virginia, after serving an internship at the Lewis-Gale Hospital, Roanoke, has located for general practice at Big Rock, Va.

Dr. Hugh P. Newbill,

After serving an internship at the Norfolk Protestant Hospital is now doing postgraduate work in neurology at the Boston City Hospital, Boston, Mass. He is a member of the class of '34, University of Virginia, Department of Medicine.

Dr. E. W. McCauley,

Medical College of Virginia, class of '32, has located for practice at Rainelle, W. Va. Since his graduation, he has served an internship and residency at the Medical College of Virginia Hospitals.

Dr. Emanuel Wallerstein,

Richmond, Va., was recently elected to membership in the American Laryngological, Rhinological and Otological Society.

Dr. T. Allen Kirk,

Roanoke, Va., was elected a vice-president of the American Rose Society at its meeting held in Rochester, N. Y., in September.

Dr. Linwood Farley,

Recently connected with the Southwestern Health District with headquarters at Abingdon, Va., has been appointed health officer of the Hanover County Health District.

Dr. Charles H. Patterson,

Of the University of Pennsylvania, class of '30, has resumed practice in Lynchburg, Va., with offices at 811 Church Street. He is specializing in dermatology and syphilology, having recently returned from Philadelphia, after taking a course in this specialty in the Graduate School of Medicine of the University of Pennsylvania.

Dr. Guy Horsley,

Richmond, Va., announces that he is specializing in proctology, in addition to his work in general surgery at St. Elizabeth's Hospital.

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Obituary Record

Dr. Chester B. Nuckolls,

Hillsville, Va., died June 28th, in a Cleveland hospital. He was sixty-eight years of age and a graduate of the former University College of Medicine, Richmond, in 1894. Dr. Nuckolls had been a member of the Medical Society of Virginia for forty years.

Dr. George Frederic Floyd,

Birdsnest, Va., died August 28th of pneumonia. He was seventy-six years of age and a graduate of the College of Physicians and Surgeons, Baltimore, in 1883. Dr. Floyd formerly represented Northampton and Accomac counties in the State Legislature. He is survived by his wife, a daughter, and a son, Dr. Elliott Floyd, of Norfolk, Va.

Dr. Barton Cooke Hirst,

Prominent obstetrician of Philadelphia, died September 2nd, at the age of seventy-four. He had served as professor of obstetrics at his alma mater, the University of Pennsylvania, for thirty-eight years. Dr. Hirst was a fellow and one of the founders of the American College of Surgeons, and was a member of many national and international societies. He was the editor of several well-known textbooks.

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RICHMOND, VA., NOVEMBER, 1935

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THROUGH A DOCTOR'S GLASSES.*

F. H. Smith, M. D., F. A. C. P.,
Abingdon, Va.
President, Medical Society of Virginia.

It is a common saying that men's views and opinions are largely molded by their vocational environments. That is, industrialists, bankers, merchants, farmers, teachers, preachers and the rest, each think as they do and as do others of their kinds because, consciously or unconsciously, they are influenced by the sum-total of the opinions, or the traditions, or the customs, or the ethics, perhaps the selfish interests, of their several vocations. Whether or not this saying will stand the test of critical analysis I do not know. At least, for me it is comfortable to think that, when I look through a doctor's glasses at the world around me, my perception and my appreciation of what I see is not exactly that of every other man in the world, but that my view is somewhat different, just because I am a doctor.

Of course, if this be so, you and I can see alike, and that is the premise upon which I shall proceed in developing my thought on this occasion: The physicians' attitude toward problems connected with the care of the sick.

Even so, there will be still individual differences. We admit that we are looking through glasses, and that glasses imply defective vision. Our eyes may be astigmatic or myopic, and the kind and degree of defect may not be uniform. So, the right is given to each of us, when another's vision seems distorted or shortsighted, to make the necessary correction for human frailty, and to accept only that which we find good. I am sure you will use that privilege, and I hope that charity, in the present case.

At the outset, I need to remind myself, and possibly all physicians, that now, perhaps more rigidly than at any previous time, we should be extremely careful in all that we say to avoid giving offense or being misunderstood. To use the expression of the man on the street, doctors are "on the spot." They are charged with arrogating to themselves special privileges, with seeking the preservation of a "medical hierarchy," or the perpetuation of a "medical trust," and that in so seeking and striving they ignore the good of the ordinary man. A carelessly uttered word may confirm these suspicions. On the contrary, so far as I can see, no physician does or should oppose anything on the ground that it will injure physicians, either individually or collectively: if for no other reason, because it will do no good to oppose any movement on the ground of self-preservation. Should the time come when the private practice of medicine becomes obsolete, or the interest of the private practitioner conflict with those of the common good, then both practice and practitioner are as dead as the proverbial dodo.

We cannot over-emphasize this point, nor the fact that it is heartedly conceded by the profession. It is a primary condition of all of our thinking and planning. The physician claims no rights or privileges save those of his common citizenship, no interests save those of his patients. He asks only to serve under conditions in which he can serve satisfactorily. Even the license to practice medicine is not his by inherent right: he practices under grant of privilege by the state.

Parenthetically, however, the right to practice medicine once having been conferred, physicians should be protected not only in that right, but also in the privileges growing consistently out of that right, unless or until, indeed, the license has been

*President's Address before the sixty-sixth annual meeting of the Medical Society of Virginia, Norfolk, Va., October 15-17, 1935.

revoked by due process of law. If, in the exercise of my right by license, I build a practice, or invest in hospital or sanatorium, the state should no more destroy that investment insidiously by entering into destructive competition with that business than should the individual destroy that property by fire or vandalism. There should be no difference between private and public morality, even in the name of public policy, except, of course, in the emergency of war or similar catastrophe.

In spite of all of the propaganda that would put physicians and the public into opposing and hostile camps, their ultimate interests are identical or, at least, mutually dependent. Certainly, physicians cannot prosper without a contented clientele, and the public cannot thrive without capable physicians. Admit that the individual physician is a human being, with all the weaknesses of other human beings, it is the fact nevertheless that the organized medical profession has, for more than one thousand years, dedicated itself exclusively to the health and well-being of humanity. If, therefore, there is any body of men able by tradition and training to speak for sick people, of their needs, and how to accomplish those needs, that body is the organized medical profession.

Trite, possibly sophomoric, such remarks may seem to this audience. But such self-evident facts are being forgotten by a large body of socially-minded people, until now it has become a doctrine, cutting across even political lines, that sickness should be provided for, as should unemployment and dependent old age, by the machinery, and through the implementation, of government.

This is not the proper forum before which to discuss the trends of political thinking. The doctor is not a politician, or, at least, he keeps his politics and the healing art as separate as the poles. But the people have become socially-minded. Sickness has become a social problem. Unfortunately, "social security" has become entangled with partisan politics. Therefore, the problems of sickness have become political. Thus, the doctor, whether he wills it or not, may be forced to take sides upon issues which should never have become political at all.

With the issue thus thrust upon us, the time has come when physicians must throw off their habitual reluctance to discuss publicly their affairs with relation to the sick. Too long already have we kept silent, permitting the advocates of radical change to usurp the field which traditionally and rightfully is that of the organized medical profession.

The doctrine that government should secure its citizenry against the vicissitudes of life is not new. Most countries of Europe have enacted or decreed so-called social security laws, some of them two generations ago. Provision of some sort of governmental control of medical practice is a part of all, or nearly all, of these European codes. Nor is the doctrine new in our country. Until just now, however, we have shrugged our shoulders, and branded such schemes as mere socialism. Socialism or not, much of what we regarded as just fancy and dreams a few years ago is now the law of the land—and "provision to meet the economic risks of illness" is just another item on the same program.

Really, legislative activity has anticipated congressional action. Already, the American Association for Social Security has introduced, or is about to introduce, into the legislatures of thirty-three states a bill to set up state-controlled systems of medical practice. Should this bill become law in Virginia, 90 to 95 per cent of Virginians might pass, voluntarily or involuntarily, into a system of medical practice controlled by a board, appointed by the Governor, headed by himself, upon which board there may or may not be a single practicing physician.

This is the situation as it exists today. That it is real is attested by the fact that those who are best informed are the most concerned. That the movement can be successfully resisted seems to depend upon whether executives and legislators of federal and state governments can be persuaded that these plans are, after all, not in the interest of the average man. Organized medicine should be prepared to accept and meet the challenge. For, if the profession cannot persuade genuine friends of the people that any system of government-controlled practice is at least as vicious for the common man as it is for the physician himself, then, I say, the doctor has no case in the court of public opinion.

The case against the present provisions for the care of the sick is brief, but, in all fairness, grave. Specifically, we are told that the relationship of private practitioner to patient is of value to the patient only as the physician is capable, and not all physicians are capable. Second, the physicians are badly distributed, so that many sections are overcrowded with physicians, while others are inade-

quately served. Third, that a large number of the people are not able to pay for necessary services even if they be available.

Let us admit, if only for the sake of argument, that each of these charges is well founded. Instantly we ask: Does any form of government-controlled medicine yet proposed accomplish the desired ends? Do they not, rather, add serious complications to the situation? Analysis will show that all of these criticisms are mutually dependent and interlocked, and that they are fundamentally economic and not professional. Therefore, the faults will not be corrected by placing the medical profession in a strait-jacket. It cannot be denied that poorly prepared physicians tend to gravitate toward poorer sections to avoid competition with others better prepared. The tendency is toward further deterioration of both physician and people. As the present generation of faithful, if poorly equipped, doctors wear out doing what they can for their people, none take their places, because the people are too poor to pay the young doctor. Medical education and equipment nowadays are too expensive to permit young men to gamble upon a location. Just as important, we are training young men today for anything else than country, or general, practice.

At least, faulty distribution of doctors is just one result of the faulty distribution of wealth and of the advantages that money can buy. But there is no way to force doctors to go where they cannot make a living, unless, indeed, we are prepared to adopt a complete system of "State Medicine," by which the government seizes the right to move the personnel of the profession from one station to another, as the Army and Navy officer is shifted "for the good of the service."

Otherwise, no solution yet proposed touches these problems. For all present and proposed plans envisage as within their scope only the man employed in industry, with or without his family. The unemployed, the unemployable, the subnormal, the self-employed, the farm laborer and the domestic servant are not provided for in these compulsory schemes, because it is impracticable to extend the "benefits" of so-called "health insurance" to these classes. Yet these constitute most of the problems that physicians of Virginia have to contend with. Any plan omitting them is no plan at all.

What need, therefore, to analyze at length other grave objections to any plan of government-controlled medical practice! Government control and such an intangible, imponderable thing as the personal service of a good medical care are simply a contradiction of terms. The one is incompatible with the other. No people can have both. If it is private practice that must go, then the American people must look forward, not to an improved service, but to a levelling-down to a drab mediocrity. If the experience of other countries is duplicated, the more complete the control in order to widen the "benefits," the lower the level, as personal initiative of the professional man and his interest in his work are the more completely throttled.

Upon this rock of fact and reasoning organized medicine can take its stand. Clinical medicine stands still today where the government has control. Medicine advances where it is untrammeled. Russia realizes and acknowledges this to be true. She is releasing her scientists, and Russian medicine is coming back to life. Had medicine stood still in our country since 1880, or even 1890, there would be no demand today for a change. In that day a king could not command, nor could a millionaire buy what is today commonplace in both diagnosis and treatment.

Therein lies the crux of our present unhappy situation. Paradoxically, want of medical care exists in the midst of abundant medical resources. How so? Just because medicine has grown so big, no substitute has been found for the doctor and his increasing skill, and no one would tell him to stop advancing and achieving in his search for the conquest of disease. When one man could serve his community from his saddle-bags and pocket-kit with all that was known of his art, his services needed not to be and were not expensive. Today, the doctor's capital investment in time and money, and his "overhead," combined, are larger than that of any individual in business. Thus, his wares have become expensive. Curiously, yet naturally, men do not think of medical care as they do of other commodities which they buy. When one wants to buy a better radio, or automobile, or refrigerating plant, he expects to pay more for the finer article. When he wants medical service, he demands the best, even though he cannot pay for it. If he cannot purchase it, he demands that he have it gratis, or of government, just as he does the other essentials of life, food, clothing and shelter.

In that last sentence we have drawn the only indictment to which the medical profession must plead guilty. We must admit that we have allowed the scientific achievements of modern medicine to far outstrip progress in what we call for want of a better term, the economics of our vocation. In other words, we have been poor business men. We should have been able long ago to predict and to provide for the day when the storehouses of medical lore and resources should have become crammed with a commodity which the people, hungry for medical service, could not buy because the price would inevitably rise beyond their means. But we did not do so. In fact, until just a short while ago, it was considered bad manners to discuss publicly such a sordid thing as money matters! How times have changed! We talk of little else now, but, like our comments on the weather, we have done little about it, at least in Virginia!

I am wondering whether it is too great a stretch of the imagination to connect our present predicament in economics with another phenomenon of the development of scientific medicine. At least, I am sure that in becoming more and more masters and doctors of the sciences of medicine, more and more specialized, we have become also less sensitive to the humanities of life. In the latest Van Dine story, one of his characters says of another: "Professor Garden is a scientist, of course, and, therefore, not altogether human." I wonder whether the same remark can be made fairly of some of our fraternity? Admit that some of our best doctors have been fortunate enough to preserve the common touch—perhaps this explains in part why they are distinguished—more of us, from the time we were students, have been taught in terms of disease rather than of the man who has the disease. We have been surrounded with machines, with clerks, technicians and assistants, until we have become more and more remote, less persons, less personable. The more machines we use, the more machine-like we become in precision, doubtless, but people in distress are looking for something more than machines and precision.

A second charge in the same indictment: Doctors have caught step with the tempo of the times. We are moving too fast. We have forgotten the art of leisurely thinking, and of cultivating the intellectual and spiritual values of thought and reflection. And so it is easy to fall into the habit of reliance upon various laboratory technicians to do our thinking for us, forgetting that there are disorders and disasters of these bodies and of these emotional lives of our's which even the X-ray does not reveal.

A country doctor said to me the other day: "I am not as good a doctor as I was in the horse and buggy days. Then, I had time to think of my last patient before getting to the next. Now, sometimes I slow my car down to fifteen or twenty miles, trying to think, and, damme, I am forced off the road or honked at by others until I get mad. Then I drive like hell, just like the rest!" Our patients and their friends sense this restlessness and hurry. They feel that they have been cheated out of something, even if they know not what. I think that if I were called upon to deliver a lay-sermon to doctors, I would choose as my text: "Be still and know —," not only that He is God, but that those committed to our care were made by Him with cravings and heartaches to which also we must minister. And more: I would remind the doctor himself that he is losing much of the finer things of life in his hurry for professional preferment. There is a price to pay for attainment and success, renown and busy-ness. I wonder sometimes whether the price is not too great.

Doctor David Riesman says that he recently asked a renowned artisan in wrought iron why the world is no longer able to build great Gothic cathedrals like that of Chartres. "Today," the artisan replied, "men are draftsmen; in those days they were craftsmen." So, medicine is, or should be, hand-craftsmanship of the finest, most personal sort. It is turned out by artisans who have served intimate apprenticeship with the masters. They work with tools and equipment and in shops the most expensive of all. They deal with material the most precious in the world, human beings. How is such a professional craftsman as the modern doctor, scientist and artist in one, to turn out day by day masterpieces of his professional work, and yet live!

There is your problem and mine. I believe we have the genius and the statesmanship to solve the problem if we will, and if we are permitted to. So far, we have approached it only half-heartedly, some with a feeling of skepticism as to the imminence of any personal threat; others from a feeling of futility of the individual to resist great social

upheavals. Truly, we cannot resist the progress of human welfare, and we would not if we could. On the other hand, we can join with those seeking real human progress, and, with our intimate knowledge and experience in this one department of human welfare, we can counsel and guide the thinking and planning of these agencies. To decline to cooperate transgresses the noblest traditions of our profession, and in the end will destroy the very interests which we are trying to protect. To agree to cooperate means the surrender of certain airs and prides, of a certain degree of individualism and independence. It means some sacrifices which we need not name. But these sacrifices will be small indeed, if we can but preserve the irreducible minimum of a good medical service—good, that is, from the standpoint of the recipient.

Not long ago I listened in at a discussion between two churchmen on the rise of some, and the decline of other religious denominations. One took the position that certain churches are losing out because they are carrying with them still the airs of aristocracy, and there is no such thing any longer as aristocracy. No, replied the other, aristocracy is a thing of the past, *except* the aristocracy of brains, and the privilege of using those brains in the service of mankind!

Let the import of these words sink in. The aristocrat, even in his hey-day, was in the distinct minority in his community, else he would not have stood out above the mass. He is gone. There is left now only the aristocracy of brains. Their's is the privilege of serving humanity.

Another has coined an equally arresting phrase: The Thinking Minority.

I suggest to you doctors that you belong, or should belong, to this thinking minority. Always a minority in your respective communities, you exert, you should exert, you once exerted, a personal influence second to none, because it is the tradition of your profession to use your brains unselfishly in the service of mankind. In large degree, we left this influence behind with the horse and buggy, thereby abandoning what we might call Social Medicine to any who would take it up, the theorist, the welfare worker, the politician, to the imminent threat of all that is best in the science and art of medicine. Now, if ever, is the chance to regain and reassert that leadership and redeem the trust handed down to us by generations of fathers in medicine, a trust to which they, at least, were always faithful.

And now I come to the end of a year's service in this honorable office. No one can come to such an hour without mixed emotions. If there is one emotion more dominant than another as I approach the moment of joining that vast and respectable company of past presidents—"has beens," if you please—it is the consciousness of the privilege that has been mine of heading up this body of men, equal in capacity to any in the state and nation. The only regret I have is that I did not have opportunity to know each of you personally and intimately. I hope the time will soon come when your President, as such or when President-elect, will be allowed the means of attending, and then invited to attend, at least one meeting of each society within the State.

I do not believe that you expect me to find words adequately to express my gratification and pleasure at having been called to this high office. How I, a plain country doctor from the mountains of remote Southwestern Virginia, could have found favor in your eyes, is past my understanding. Instead, let me utter, as it were in heartfelt benediction, a wish for each one of you:

That you may be "supported all the day long, until the shadows lengthen, and the evening come, and the busy world is hushed, and the fever of life is over, and your work is done. Then, may you be granted a safe lodging, and a holy rest, and peace at the last."

THE TOXEMIAS OF PREGNANCY AND CERTAIN DEFICIENCY DISEASES.*

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The idea that the diet during pregnancy has to do with the causation of the toxemias of pregnancy is not a new one; however, the attention has chiefly been focused on the energy producing elements and not so much the accessory factors. The carbohydrates in early nausea and the proteins in late toxemia are the chief indictments. At the present time the apparent abnormalities in protein metabolism are chiefly considered as physiological and carbohydrate metabolism is known to be influenced by other things, such as vitamins, hormones, yeast, *et cetera.*

The paradox in the diet during pregnancy is known and recorded. The geographic, seasonal, economic, climatic, optional and obligatory factors which influence the diet offer further puzzling problems, some of which seem irreconciliable. Then, too, the fact remains that we consider pregnancy a normal physiological process, yet we fail to answer adequately many of the pathological manifestations.

It is unnecessary and almost impossible to recount the various ideas as to the causation of the toxemias. One gets the idea, which was voiced over one hundred years ago, that perhaps after all the late toxemia has no one cause, but is probably a syndrome. Zweifel did not overstate it when he called eclampsia a disease of theories. Most everyone realizes the all too often mistake of looking to the uterus and its contents for the answer to the various pregnancy riddles.

So long as we use the term "toxemia of pregnancy" and so long as we are unable to demonstrate or isolate any toxin, then we are at liberty to look in any and all directions for evidence and search for the solution of the problem.

McLester in his official speech before the A. M. A. alluded to the possibility that many of the answers to the disease riddles may be found in the diet deficiency syndromes and pointed out that some of our obstetrical problems were being and had been investigated with this in mind.

Lusk has given us a world of material in his splendid book on nutrition. Macomber and others have made many worth-while contributions. Mellanby has made some very significant contributions on nutrition during the pregnant state and has urged the obstetricians not to think only of the mechanism of labor and its problem and has shown how at least two of the sinister triad of obstetrical complications—infection and toxemia—may be combated by proper nutrition. Obstetricians everywhere are grateful for his contributions.

In previous papers we have given our statistics, and emphasized the similarities and differences between our series of late toxemias, drawn largely from rural North Carolina, and other men in different localities. Lately our attention has been focused on certain characteristics which seem fairly constant. To state it poorly, we have been struck with the number of patients in eclampsia who are in a very poor state of nutrition. On checking the localities from which they are referred and on reviewing the state morbidity and mortality statistics, we find that the same areas in which eclampsia occurs most often we are apt to find a larger percentage of pellagra and similar diseases. With this fact in mind and with some experience in treating the early toxemias and polyneuritis, we have tried to analyze our records and see if they correspond with the opinions of others.

It seems proper that we should evaluate what information is at hand that may be significant. Strauss, McDonald and Castle have shown that dietary deficiencies can account for both hypochromic and macrocytic anemias of pregnancy and submit facts which they think favor the view that polyneuritis of pregnancy is a deficiency disease and may be satisfactorily treated as such. Beckwitz and Lufkin reviewed the literature and collected fifty-two true cases. In practically every instance the

*Read before the Richmond Academy of Medicine, January 22, 1935.

neuritis was preceded by pernicious vomiting. They point out the similarity in the clinical and pathological nerve changes in pregnancy and in the changes in pregnancy and in the changes resulting from beri-beri and pellagra. Plass and Mengert have added other cases and carry the reasoning in the same direction and point to the hope that a more helpful therapy is at hand. Wilson and Garvey, Hoffman and McGoogan among others have also written on this subject.

In the past five years we have seen three known cases of polyneuritis of pregnancy. One terminated fatally the day after admission to the hospital undelivered at four and one-half months. Another recovered the use of her lower extremities one year after therapeutic abortion. The third was four months convalescing after spontaneous abortion at four months. In all three pernicious vomiting was present. The admission diagnosis of the fatal case was acute yellow atrophy of the liver.

We have seen two spurious cases in an experience similiar to Plass and the German writers where the nerve symptoms were probably due to a drug used as an abortifacient and both recovered.

We all know that rats are especially prone to polyneuritis and that intravenous liver extract is quite beneficial but there is difficulty in getting such rats pregnant, and the duration of pregnancy is so short that polyneuritis cannot be induced and cured during pregnancy. However, we hope that we will soon have aid from this source. In the meantime vitamin B should be used as a prophylactic in pernicious vomiting as suggested by Strauss and McDonald.

Those who still hold to the idea of infection in eclampsia can find interesting facts in studying infections in vitamin deficiency. McConkey and Smith in studying the production of tuberculosis in the intestines of guinea pigs found that "the ingestion of tubercule bacilli by the guinea pig is not the sole factor in production of tuberculosis" and in their opinion an adequate supply of vitamin C usually protects these animals against ulcerative tuberculosis, and later in an effort to produce peptic ulcers experimentally they observed that diets deficient in vitamins A, B, and D did not cause peptic ulcers if the supply of vitamin D was adequate, and in case of mechanical injury to the mucosa of the duodenum, healing was rapid and complete when the diet was adequate but was followed by peptic ulcer formation when the diet was deficient in vitamin C. After a most comprehensive review of the literature and a clear check on their own work, D. T. and Susan G. Smith point out the relation of vitamin deficiency to focal infection. They conclude "studies suggest that a deficiency of certain vitamins results in the development of focal infection." The most important of these is vitamin A, which is frequently referred to as the anti-infection vitamin of Mellanby; C and G are next in importance and B and D are less important. There is no proof that E has any relation to infection. Infection is often the first symptom of vitamin deficiency and a higher level of intake is necessary to prevent infection than to promote growth. Pure vitamin deficiencies are rare in this country, yet partial, multiple, chronic deficiencies are probably quite common. This fact should be remembered. Ruffin and Smith in treating pellagra with certain liver preparations at Duke Hospital found, and in reviewing the foods consumed by the patients prior to their development of pellagra, were impressed with the similarity between their diets and the diet which Goldberger and Wheeler used in producing pellagra in convicts in Mississippi. An estimate showed this to be a 2900 calorie diet consisting of fat meat, field peas, rice, hominy, grits, cane syrup, brown gravy and lard and corn meal, which shows a diet deficient in vitamin G (B_2), also A, C, and D, and in iron, calcium, phosphorous and complete proteins. On close and repeated questioning and investigation we find that the type of patient that we see in eclamptic convulsions is the same patient who subsists on a diet similar to the above. We have therefore made an effort to correlate any facts that may have a bearing on the production of eclampsia.

The last report of the bureau of vital statistics in our State showed 74,743 births and 33,069 deaths. Of these deaths 640 were due to diseases of pregnancy, child-birth and the puerperal state. There were 236 deaths due to toxemias of pregnancy and 76 from post-partum hemorrhage, a certain percentage of which would have a toxemic background. During the same year there were 696 deaths from pellagra of which 470 were female and 275 were in the child-bearing age. We wrote to our confreres in five widely divergent localities within the State and found that there were 44 toxemic deaths.

These counties had a total of 77 deaths from pellagra. 35 of which were in women in the child-bearing age. This seems signficant at first glance but probably means simply that both these diseases are evident throughout the State and simply parallel each other. In our county there were:

Total births—1,748.
Maternal deaths—10.
Deaths from toxemia—5.
Total deaths—county—773.
Maternal deaths—1.3 per cent of total.
Maternal mortality—.55 per cent.

We have investigated our hospital records (Watts, Salvation Army and Duke) for the past four years and in this find that during the past four years 160 females have been treated for pellagra. Only seven of them were pregnant and one of the seven had symptoms of late toxemia. One patient had sprue. We are at present studying the fertility of individuals with pellagra. During the same period of time there were 2,120 patients delivered in these hospitals and 174 patients with late toxemia of pregnancy. Our mortality rate for this complication is about 13 per cent.

At our request Susan Smith made the following list to insure against dietary deficiency, so far as the vitamin and accessory factors are concerned. She suggests the following addition to the average diet:

Six brewers yeast tablets.
Eight ounces tomato or orange juice.
One to two pints of milk.
Two teaspoonsful lactose.
Three ampules of plain Haliver oil (substitute Haliver oil supplemented with Viosterol at this point. This, of course, does not contain the necessary minerals.

Pellagra can be produced experimentally by diet control. We do not think we can duplicate this in eclampsia. However, it has been known for a long while that by proper supervision of the minerals, vitamins and energy producing foods in the diet, eclampsia incidence can be reduced. The various degrees of chronic deficiency in nutrition should be kept in mind and the fact that pregnancy is one of the most exact functional tests for all the symptoms of the body should be appreciated and the danger of some breakdown being precipitated guarded against. We simply state that the pellagra and eclampsia ratio is clearly parallel in North Carolina and we are trying to find any factors which may be helpful in the solution of our problem of the prevention of eclampsia.

DISEASE IN MILITARY CAMPAIGNS.*

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Comparison of the number of deaths from disease and battle wounds in various military campaigns is interesting and affords valuable lessons for the future from a medical viewpoint.

The usual graphic descriptions of horrible destruction of life and property by the infinite variety of war weapons have obscured the casualties resulting from the less spectacular and insidious legions of disease, causing them to be relegated to a place of secondary importance in the popular imagination.

Such, however, is not the case. According to Zinsser, "Typhus with its brothers and sisters—plague, cholera, typhoid, and dysentery—has decided more campaigns than Caesar, Hannibal, Napoleon, and all the generals of history. The epidemics get the blame for defeat; the generals the credit for victory. It ought to be the other way round." In his opinion, typhus fever and the louse won the World War; for example, the Austrian Army feared to invade Serbia in 1915 due to an epidemic of typhus which had killed 150,000 people in six months of that year; and, again, in Russia 25,000,000 cases with 3,000,000 deaths from this disease aided the spread of revolution and the complete collapse of its huge army.

Disease has usually caused more deaths than battle wounds in past wars, and many important campaigns have failed because of disease alone. A few examples will be cited.

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The Persians under Xerxes were defeated in their invasion of Greece by an epidemic of plague and dysentery; Athens fell as the result of plague; the sieges of Syracuse in 414 B. C. by the Athenians, and in 396 by the Carthaginians failed due to plague in these armies; Mecca was saved by small-pox which decimated the Saracens; the four Crusades to Jerusalem between 1098 and 1270 were accompanied by epidemics of scurvy, plague, small-pox, and probably anthrax; the siege of Bagdad by the Saracens in 1439 failed because of dysentery; Metz was saved from Charles V by scurvy, dysentery, and typhus fever in his army; Maximilian II of Germany was defeated by typhus in his campaign against the Turks in 1566; the French captured Prague in 1741 due to a typhus epidemic among the Austrian defenders; Frederick Wilhelm II of Prussia in 1792, owing to an epidemic of dysentery among his army, was unable to oppose the army of the French Revolution and retreated into Germany.

Since the beginning of the nineteenth century the following campaigns will serve to illustrate the theme:

France sent 58,000 men on an expedition to Santo Domingo in 1802, but yellow fever quickly killed many thousands, and only 8,000 returned to France alive.

Napoleon's Russian campaign failed due to typhus, typhoid, dysentery, and pneumonia resulting from unsanitary conditions and lack of proper food and shelter. Of the 500,000 men in the French Army who invaded Russia in June, 1812, all died of disease except 60,000 killed in battle and 20,000 who returned home in December of the same year.

A Russian Army of 115,000 men invaded Turkey in 1828 and within one month 6,000 men died of plague, and one-half of the total force was sick in hospitals at one time, while 100,000 died of plague, typhus, typhoid, dysentery, or cholera. Only 15,000 returned home.

In the Crimean War of 1854-56 among the British and French allied armies of 200,000 men, 67,000 died of cholera, typhus, typhoid, dysentery, and malaria while 25,000 were killed or died of battle wounds.

The French expedition to Madagascar in 1895 lost one-third of their force of 18,000 men by death from disease, and only 25 from battle wounds.

In the South African War of 1899-1902 the British Army of 448,435 lost 16,171 men from disease, and 5,773 died of battle wounds. Typhoid fever alone caused 59,750 cases of sickness, and 8,227 deaths among all ranks.

Similar conditions have prevailed in the history of wars of the United States.

In the Mexican War of 1846-47 over 100,000 Americans went into Mexico. Of this force 10,986 died of such diseases as typhoid fever, dysentery, small-pox, malaria, and tropical infections, while only 1,549 were killed in battle or died of wounds.

In the War Between the States, 1861-65, the Union Army of 2,213,365 men lost 202,252 from disease, and 111,874 from battle wounds. Such diseases as scurvy, typhoid fever, dysentery, malaria, small-pox, and pneumonia caused the death of many thousands in camps, in prisons, and at the front, due to lack of proper sanitation and hygiene. Typhoid alone caused 27,000 deaths and 75,000 sick cases in the Union Army.

In the Spanish-American War, 1898-99, we lost 379 men in battle, and 4,795 from disease, most of whom never reached Cuba, of a total of 280,564. Typhoid fever alone caused 20,904 cases of sickness and 2,188 deaths principally in camps in this country, as a result of inadequate methods of sanitation and hygiene, and lack of authority of Medical Officers to enforce proper methods.

Our losses in the World War of 1917-18 were: died from disease 58,119; killed or died of battle wounds 50,385. A large percentage of the deaths was caused by influenza which occurred during the war as a pandemic of unprecedented severity. In the United States Army of 4,016,936 men there were only 2,200 cases of typhoid fever with 200 deaths. This is in marked contrast to previous wars, and the great reduction in its incidence was due to compulsory inoculation against this dreaded disease, improved methods of sanitation and hygiene in the field, and excellent cooperation between Commanders of line units and Medical Officers, which policy was enforced by the War Department.

(See Table 1 for above data).

Such tremendous losses from disease, mostly preventable, were almost entirely due to ignorance and neglect on the part of officers and men of the various armies involved. But there is no longer any excuse for such losses, as the following methods of

TABLE 1.—DEATHS FROM DISEASE IN MILITARY CAMPAIGNS

Campaign and Year	*Army*	*Troops Engaged*	*Killed or Died of Battle Wounds*	*Died of Disease*	*Per Cent of Total Died of Disease*
Santo Domingo, 1802	French	58,000	-----	50,000	86.2
Russian, 1812	French	500,000	60,000	420,000	84
Turkish, 1828-29	Russian	115,000	-----	100,000	86.9
Crimean War, 1854-56	British & French	200,000	25,000	67,000	33.5
Madagascar, 1895	French	18,000	25	6,000	33.3
South Africa, 1899-1902	British	448,435	5,773	16,171[1]	3.6
Mexican War, 1846-47	American	108,475	1,549	10,986	10.1
Civil War, 1861-65	Union	2,213,365	111,874	202,252[2]	9.1
Spanish-American, 1898-99	American	280,564	379	4,795[3]	1.7
World War, 1917-18	American	4,016,936	50,385	58,119[4]	1.4

[1]Typhoid fever alone caused 8,227 deaths and 59,750 sick cases in the British Army.
[2]Typhoid fever alone caused 27,000 deaths and 75,000 sick cases in the Union Army.
[3]Typhoid fever alone caused 2,188 deaths and 20,904 sick cases in the United States Army.
[4]Typhoid fever alone caused 200 deaths and 2,200 sick cases in the United States Army.

hygiene and sanitation will prevent the occurrence or spread of these diseases:

(a) Dietary deficiency diseases as scurvy, beriberi, rickets, and xerophthalmia are avoided by a diet containing vitamins A, B, C, D, and E in milk, butter, eggs, spinach, whole grains of any kind, dried beans, tomatoes, raw cabbage, citrus fruits, lettuce, berries, liver, and other meats. Also green vegetables, sugar and starches, fats and oils, table salt, pure water, tea, coffee, and cocoa are needed in a well-balanced menu for good health.

(b) Diseases of filth, as typhoid and paratyphoid fevers, cholera, dysentery, diarrhea, and intestinal parasites contracted by swallowing infected water or food, and by means of "food, fingers, and flies," are prevented by personal hygiene, immunization with vaccines, purification of water, examination of food-handlers for carriers, inspection of food supplies, destruction of discharges from infected persons, and protection of water and foods from insects and dirt.

(c) Air-borne diseases, as pneumonia, influenza, tuberculosis, diphtheria, scarlet fever, measles, mumps, tonsillitis, and meningitis are prevented by avoiding contact with and isolation of infected persons, destruction of their discharges, immunization, personal hygiene, and use of specific antitoxins and serums.

(d) Insect-borne diseases, as typhus and trench fevers by lice, bubonic plague by rat fleas, dengue, malaria, and yellow fever by mosquitoes, and Rocky Mountain spotted fever by cattle and wood ticks are prevented by killing or controlling all such insects, by destroying their breeding places, and screening all persons in the infested area.

(e) Diseases entering through the skin, as venereal diseases, tetanus, small-pox, chicken-pox, ringworm, hookworm, tropical parasites, lice, and scabies are prevented by prophylaxis, antitoxin, vaccination, isolation and treatment of infected persons, delousing of infested persons and clothing, and personal hygiene.

In addition to the above methods, it is the duty of all officers and men of the armed forces of our nation to conserve and maintain their health, as battles are won only by strong and vigorous soldiers in the field. Without good health, morale, stamina, and courage do not exist in a practical sense.

The Medical Corps of the Army has two motives in the plan of national defense: one is humanitarian, to ease the suffering and save the life of the soldier; the other is tactical, to conserve and maintain the fighting strength of the army. This is the prime function of the Medical Corps and the mission of all of its officers, nurses, and enlisted men.

Man-power is the most valuable and costly resource of a nation in peace and in war. A veteran soldier saved from disease or death from battle wounds is worth far more than a green recruit.

The best trained, the bravest, and the largest army will be vanquished by the unseen legions of disease always on the alert, especially during military campaigns, without proper sanitary and hygienic protection.

Application of modern methods of military hygiene and sanitation, and constant supervision by Commanders in cooperation with Medical Officers, it is believed, will save many thousands of soldiers from disease and death in future wars.

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CONTRACEPTION: AN ANALYSIS OF SIXTY CASES USING THE COMBINED METHOD—VAGINAL DIAPHRAGM PLUS JELLY.

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It is not the purpose of this article to consider the subject of contraception or birth control as such but to present an unbiased detailed analysis of sixty cases using the vaginal diaphragm pessary in conjunction with a spermicidal jelly. This work was started in 1928, and, in addition to the initial case data and advice, a follow-up record has been maintained as far as possible up to the present. This series does not by any means represent the entire number of patients to whom contraceptive advice was given, but the writer has been unable to locate the others in order to obtain the desired information. It is felt that the data herein reported is unusually accurate and reliable because the majority of the patients were either close friends or personally known, which fact made it easier to obtain information by personal contact at frequent intervals over a period of years.

Up to 1928 little information as to actual results achieved with various methods of contraception had been obtained in this country due to several factors, but chiefly because the subject was taboo both socially and professionally. Given impetus by prominent lay people, birth control clinics have been established throughout the nation, whereby reliable, scientific advice may be obtained. Although endorsed by prominent men of science, literature and public affairs as well as by numerous medical, religious, political, social and educational groups, birth control has not been officially recognized by organized medicine. It is feared that unless this is done in order to perfect some form of medical control, this weapon of great power for good will be jeopardized, since modern contraceptive supplies are being sold promiscuously to the public by pharmaceutical stores without regard to proper instructions or examinations which they are not in a position to give.

From a survey made in 1933-34 by a group of physicians, it was established that interest in and the prescribing of contraceptives was found in every state, and, further, that the professional status of physicians prescribing contraceptives averages high. This survey also showed that the use of the occlusive diaphragm and spermicidal jelly was preferred by the greatest number of physicians replying to the questionnaire and that this combined method was held to be the most efficient as well as the least harmful physiologically and psychologically. The fact that less than an average of 5 per cent failures was reported for all patients using the method is highly suggestive of its effectiveness. This compares exceedingly accurately with the 96 per cent protection obtained by clinics and the 97 per cent reported herein. No method yet developed assures 100 per cent success at all times and under all conditions.

The majority of the patients reported herein are from Virginia, but others are from New York, District of Columbia, North and South Carolina, and Georgia. The minimum age was seventeen years, the maximum forty-eight, and average was twenty-seven years. The maximum time married when fitted was twenty years, the minimum twelve hours, and the average five and five-tenths years.

The husbands of these patients represent twenty-three different occupations, including those from physicians, ministers, bankers, college professors, salesmen, farmers, etc., down to the factory workers and truck drivers. Those in the upper occupational groups and skilled workers' class constitute 80 per cent, the high incidence of which is expected

in private practice. The private patients and those in the upper strata of society have no trouble in getting contraceptive advice, but those that really need this information, the poorer classes, have been neglected by organized medicine.

The economic conditions were good in 59 per cent of the cases, fair in 30 per cent, and poor in 11 per cent.

As to the health of the families, thirty-six cases, or 60 per cent, were good. In nineteen cases the health of the wife was either fair or poor. In one case the patient had renal stones, pyelitis, and cystitis. Two cases had moderately advanced active tuberculosis. One case had cardio-renal disease, another a goitre, and nine cases had pronounced pelvic trouble. Five cases were very nervous, frail, and definitely anemic. In five families, the husband in one case was unable to work on account of a large, post-operative ventral hernia with a draining sinus, while in another case the husband was a severe diabetic. In the remaining three cases each husband had arrested tuberculosis.

It is of interest to note the various religions represented by these patients who sought contraceptive information. There were fifty-five Protestants (91.6 per cent), three Catholics (5 per cent), and two Hebrews (3 per cent). In the larger clinics the Protestants number about 50 per cent, the Catholics 30 per cent, and the Hebrews 10 per cent.

It can hardly be claimed that the majority of women who seek contraceptive advice do so with a desire to shirk motherhood, for among the thousands of applicants the average number of pregnancies is four, of living children three, and nearly 25 per cent have five or more living children. In this group of sixty cases there were 146 pregnancies, of which there were ninety-seven living children, four dead, and forty-five abortions or 30 per cent. Sixteen of these abortions, or 36 per cent, were accidental, and twenty-nine or 64 per cent induced. Of the induced, twenty-seven were by drugs self-administered, one illegally by a physician, and one therapeutically performed on account of active tuberculosis. There were nineteen cases, or 31 per cent, without children. It might be of interest to enumerate the number of living children as follows:

Sixty-eight per cent have one or more living children;

Thirty-eight per cent have two or more living children;

Twenty-four per cent have three or more living children;

Seventeen per cent have four or more living children;

Six per cent have five or more living children.

Only one patient, age thirty-three, married nineteen years, has ten living children and in addition has had three miscarriages. In another case the wife was forty-one years of age, married twenty years, and besides five living children had fifteen miscarriages. Another, age twenty-six, married four years, and did not have any living children but had six self-induced miscarriages. This patient stated that she just couldn't go through with a pregnancy and would commit suicide first. The high incidence of illegal abortions (62 per cent) admitted out of a total of forty-five is startling and may even be higher. That women will resort to abortions in the absence of reliable contraceptive advice is clearly evident, not only from these cases but also from the fact that there has been a notorious increase in the United States, estimated to be a million a year illegally performed by physicians, and 250,000 by others not physicians. Not only is the cost to the victims of $100,000,000, but sadder is the fact that these abortions result in a large percentage of deaths. This is an enormous and unnecessary waste of human life and energy which may be prevented to a large extent by scientific, effective contraceptive methods.

In 97 per cent of these cases contraceptive methods were used either by the wife, or husband alone, or by both.

When used by the wife alone in thirty-nine cases, the methods and substances used may be enumerated in order of frequency, as follows:

A. *Douche* (twenty-nine cases): Lysol (seventeen), bichloride of mercury (three), plain water (three), vinegar (two), lactic acid (one), soda (one), zonite (one), boric acid (one).

B. *Douche plus Suppository* (six cases).

C. *Contraceptive Jelly* (three cases).

D. *Contraceptive Jelly plus Vinegar Douche* (one case).

When used by the husband alone in thirty-eight cases, the contraceptive methods were as follows:

A. *Condom* (twenty-two cases).

B. *Withdrawal* (twelve cases).

C. *Condom plus Withdrawal* (three cases).

D. *Condom at time of Ejaculation* (one case).

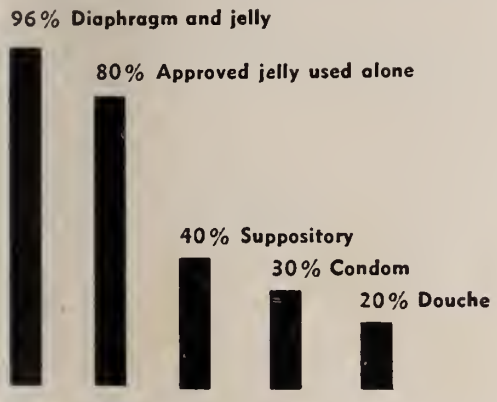
When used by both together in nine cases, the methods were as follows:

A. *Douche plus Condom* (four cases).

B. *Douche plus Withdrawal* (three cases).

C. *Jelly plus Condom* (two cases).

Thus it is easily seen that the use of contraceptives is about equally divided between husband and wife. In the wife's method the douche is used more frequently and lysol leads the field. The condom is preferred as a means of protection by the husband when using a contraceptive followed next in popularity by withdrawal. In three cases the wife stated that she "hated" condoms, and, in addition, two of these cases claimed they caused irritation. In general, the husband did not profess love for the condom. It might be stated also that single methods used led to more accidental pregnancies than double methods. The douche seemed to be the most hazardous and the condom next. With the douche, various clinics report only 20 per cent success, and with suppositories, 40 per cent.



If the douche is used in spite of the high percentage of failures, proper medication may increase the effect of irrigation. There is a tendency, however, for women to be careless in their choice and use of chemicals as contraceptives and many thus suffer injurious effects. Bichloride of mercury and lysol, both widely used by women, have caused death when used in a douche and should be condemned. As an instance of carelessness, one of these patients stated that she always used two tablespoonsful of lysol to the quart of water as a contraceptive douche and literally burned her tissues to such an extent that the "flesh just peeled off." If chemical contraceptives are to be used, they can be employed to a greater advantage and with much greater chances of success in the form of jellies. The jelly that is most frequently used is, perhaps, the lactic acid form, and results have shown it to give about 80 per cent protection. When carefully tested and properly applied, the condom should offer a very safe and simple method of contraception, yet we find frequent failures; in fact, various clinics show that the success obtained with its use is only 30 per cent. As to coitus interruptus or withdrawal, suffice it to say that this method is not only inefficient (65 per cent failures) but is physiologically and psychologically unsound.

All of these cases were fitted with the same make of diaphragm pessary and used in conjunction with a contraceptive jelly obtained from the same firm. The majority of the patients were satisfactorily fitted within a few minutes and with little or no difficulty. Since detailed instructions are essential to success, more time is usually consumed in this manner and explaining the relationship and functions of the pelvic organs than with the actual mechanical procedures. A thorough gynecological examination is imperative since certain pathological conditions may be present and thus interfere with a proper fitting. It is also important that both the bladder and the lowel bowel be empty at the time of fitting. The largest pessary that can be comfortably used should be chosen. A possible pregnancy should always be kept in mind and, if there is any suspicion whatsoever, then the patient should be requested to return after her next period and take no chances in the meantime. Always caution the patient that her vaginal condition may change, especially in case of the newly-wed or after childbirth, and that she should report for another examination and refitting. A bride may in general be fitted within two to six weeks after marriage and occasionally earlier. In the meantime she is instructed to use a reliable contraceptive jelly and to give greater protection the husband should use tested condoms. It is always a safe and wise procedure to allow the patient to walk around the office a little after you feel that the correct fit has been made, since you will occasionally find that, when you reexamine her, a larger size will be required.

It might be well to state just what trouble was experienced in the fitting of these sixty cases. In

only one case, in spite of her intelligence, the patient just didn't seem to catch on to a very simple procedure, so her husband was instructed to do the job, which he did very quickly and to the entire satisfaction of all concerned. Some little difficulty may be experienced by the patient where the vaginal floor angulates sharply downward from the introitus. The pessary has a tendency to lodge against the anterior surface of the cervix instead of following the posterior vaginal wall under the os. This may be remedied by having the patient use a finger of the opposite hand and guide the posterior rim of the pessary pass the cervix. In only two instances was the fit unsatisfactory and those in cases of a marked relaxed vagina. It would probably have been better to have used a special type of pessary (matrisalus) or given some other suitable method. In all cases the finger nails of the patient should be examined or have her use finger cots, for, in one case that will never be forgotten, the vagina bled rather profusely at the time of fitting from an incised wound self-inflicted by her long nails.

H-R PHYSICIANS' FITTING SET WITH VAGINAL MODEL

In most of the clinics the majority of women can be fitted with sizes 65, 70, 75, and 80. These sizes will be found in the physician's fitting set along with a vaginal model which is a valuable aid to the physician in the instruction of his patients. Fitting rings may be used instead in order to determine the correct size of the pessary needed. These may be obtained in sizes 50 to 90 mm. and kept on hand. These cases were fitted in order of frequency as follows:

No. 75 vaginal diaphragm pessary—36 per cent.
No. 80 vaginal diaphragm pessary—27 per cent.
No. 85 vaginal diaphragm pessary—17 per cent.
No. 70 diaphragm pessary—12 per cent.
No. 65 diaphragm pessary— 7 per cent.

Only one case took a size 90 and this has given entire satisfaction and protection for four and one-half years.

These patients have been using this method for an average of twenty-three and five-tenths months. Further details in this regard may be enumerated as follows:

Forty-one cases, or 83 per cent, have used this method twelve months or more.

Twenty-four cases, or 48 per cent, have used this method two years or more.

Ten cases, or 20 per cent, have used this method three years or more.

Five cases, or 10 per cent, have used this method four years or more.

Only one case has been using it for over five years.

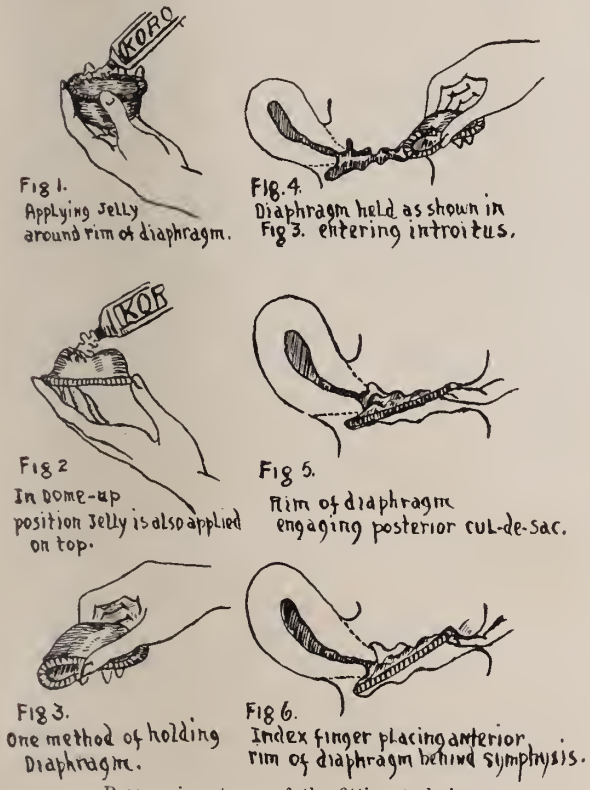
As previously stated, the method has given 97 per cent protection. Twelve pregnancies have occurred since these cases were fitted, but only two of these must be attributed to failure of the method. In two cases it was known at the time that the fit was unsatisfactory and this was explained to the patients, but they insisted that they had tried every other method and were willing to take the chance. It is not felt that a known unsatisfactory fit should be classified as a failure. In another case the patient was overdue a period by a few days and was advised to wait a while to see if she would menstruate as there was a possibility that she might be pregnant. She desired to be fitted in spite of this advice and when she was examined later she was found to be about two months pregnant. One case stopped using the pessary after six months and became pregnant immediately afterwards. Two cases stopped after one year and both became pregnant shortly afterwards. Another case, after using the pessary for several months according to instructions, decided to insert it at the time of her husband's ejaculation because she felt that this was the only unsafe moment. She found out differently and became pregnant, which was not necessarily the fault of the pessary since it is known that live sperms are occasionally present in the male secretion prior to ejaculation. In three cases, after using the

method with entire satisfaction and protection for three years, pregnancies were desired and occurred immediately after omitting the pessary and jelly. The two cases which are credited with having failed to protect, the pregnancies occurred within three months after use. One of the patients stated, however, that she might have been careless in inserting the pessary.

The cases that had any difficulty at all with the method or voiced any complaint may be enumerated as follows:

(a) In one case the patient claimed that it was uncomfortable for a while, but she got over this and now wouldn't be without it.

(b) In another case, the wife said it was too much trouble to use, yet she desired no more children and could hardly provide for those she already had. It is inconceivable how the pregnancy that followed could be less trouble than the method.


KORO
Fig 1.
Applying Jelly around rim of diaphragm.
Fig. 4.
Diaphragm held as shown in Fig 3. entering introitus.
KOR
Fig 2
In dome-up position Jelly is also applied on top.
Fig 5.
Rim of diaphragm engaging posterior cul-de-sac.
Fig 3.
One method of holding Diaphragm.
Fig 6.
Index finger placing anterior rim of diaphragm behind symphysis.

Progressive stages of the fitting technique.

(c) Another case said that it was slightly uncomfortable, but she didn't mind that as long as it afforded protection.

(d) Another, after using it for a year with full protection, stated that it made her nervous, so she discontinued its use and became pregnant.

(e) Another stopped after a year because her "husband was lazy," as she expressed it. A pregnancy followed, which was destroyed by drugs self-administered. Complications occurred which required hospitalization and surgical procedures. She claimed that she was a "fool" for not using the pessary.

(f) After using the method for one year, the husband objected to his wife using any method at all. She has gotten by without her husband's knowledge of the fact that she was at least using a jelly and vinegar douche.

(g) Another case used the method for about six months and then claimed that it was "uncomfortable and hurt." She became pregnant afterwards, but now says that after she gets over this pregnancy she will use it regardless.

(h) In one case the husband experienced a rather marked burning sensation from the jelly, evidently being sensitive to the glycerine, but after about two weeks this disappeared entirely.

It is rather remarkable as to the life of these pessaries. In only two instances was it necessary to make a replacement. In both, the springs were found to be broken when the pessaries were withdrawn. It is safe to state that in general a pessary manufactured by a reliable firm will far outlast the guarantee. In several instances pessaries used by these patients, which were formerly guaranteed for a year, have lasted for two and one-half years. One patient is using the same pessary she was fitted with three years ago and it is still in excellent condition.

Until a better method is developed giving entire security and simplicity the vaginal occlusive type of pessary plus a reliable spermicidal jelly must be given preference over all others. First, and foremost, it is reliable. Second, it is physiologically permissible. Third, it is the most successful from the psychological point of view. Fourth, it requires the least preparation commensurate with complete protection. Fifth, it is the simplest method yet devised giving adequate protection. No one has yet been able to bring forward any clinical evidence that this type of pessary, properly fitted by a physician, correctly used and cared for, has ever injured any woman in any respect whatsoever.

Patients as a rule are most grateful for a method that covers the above points. They are high in their praise and free with their expressions. Listen to some of their actually recorded remarks:

"Wonderful! I wouldn't sell mine for anything."
"A miracle! Unable to tell its presence."
"Mind is easier. Fear of pregnancy is gone."
"Why didn't I find out about this before."
"It's a pity that all women don't know about this."
"My husband doesn't know it's there."
"No trouble to use—just a matter of a few seconds now."

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101 Liberty Street.

ERYTHEMA NODOSUM—WITH REPORT OF THREE CASES FOLLOWING MEASLES.*

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H. K. Shaw,[1] in Abt's Pediastrics, defines erythema nodosum as "an acute infectious disease which presents a peculiar bruise-like eruption on the skin, and is characterized by a period of incubation, of invasion, of eruption and of desquamation."

The name erythema nodosum was first given this condition in 1799 by a French physician, Robert Willan. The nature and cause of erythema nodosum have aroused considerable controversy. At one time it was considered a form of erythema multiform. Then McKenzie,[2] in 1886, associated it with rheumatism, and this was unquestioned until 1905 when Lendon suggested that it was mildly infectious and a clinical entity. He considered phlyctenular conjunctivitis, which is now held as tubercular, as a pathognomonic prodromal sign.

At the present time various writers place erythema nodosum among these categories: (1) rheumatic, (2) tubercular, (3) specific disease entity.

The rheumatic association with this condition is rather a heritage from days past. Hardly anyone at this time will admit a definite rheumatic etiology in this connection.

Feer[3] reported 749 cases from the literature, finding only three complicated by endocarditis, indicating the improbability of a rheumatic connection.

Koch,[4] in 48 cases, reported no joint complications. Landau,[5] in 130 cases, reported rheumatic symptoms in only five of these.

The tubercular conception of erythema nodosum is one that has numerous supporters, especially abroad. This casual relationship was first noted by Uffelmann[6] and Oehme, in 1872, when they saw it in association with tubercular meningitis. However, not until the Von Pirquet tuberculin test became popular did it attract many advocates. Pollak,[7] of Austria, thought it a tuberculous skin disease but could never isolate the tubercle bacilli. Elsa Lagergren[8] in all cases seen at the Children's Hospital of Goteborg, Sweden, from 1922-27, showed a close connection with tuberculosis. In only six of 142 cases did she get a negative tuberculosis skin test, and five of these had been tubercular contacts.

Dickey,[9] in 16 cases, concluded that a tuberculous infection existed if we consider the intracutaneous tuberculin test specific, and that in most cases a perifocal reaction in the chest was found by X-ray. He regards the condition as evidence of an early infection with tubercle bacilli unless proved to the contrary.

Landau[10] describes four cases of a class of thirty-one pupils and found the source of infection to be a girl with a right side cavernous type of tuberculosis. He considers it a tubercular manifestation.

Dennes von Moritz[11] reported 10 cases, all giving a positive tuberculin test.

*Read before the Norfolk County Medical Society November 26, 1934.

Nicola Johannsen[12] concluded that erythema nodosum was an allergic disease of the skin, often caused by allergens originating in a tubercular focus.

Gamstedt,[24] in 51 cases, reported tuberculin test negative in all just before the eruption fever, and positive in all just after the fever with one exception, and this was positive five days later.

J. O. Symes[13] concluded there was an undeniable association between erythema nodosum and tuberculosis based on clinical evidence, but poorly shown on the pathological and bacteriological side.

Ernberg,[14] who is one of the outstanding champions of the tubercular theory, reasons very clearly that "The symptom complex, called erythema nodosum can be explained as an autogenous tuberculin reaction." First, he argues that it is not merely a disease of the skin, for the temperature curve does not coincide with the eruption. Tubercle bacilli have never been isolated from the skin lesion, disproving the theory that it is skin tuberculosis. In a series of thirty-nine cases, nearly all showed pathologic hilar glands by X-ray and two showed lymphomas of the neck. Then he made a "histologic comparison of excised erythema nodosum infiltrates with excised infiltrates elicited by injection of tuberculin in patients reacting positively to tuberculin but without erythema nodosum." This examination showed a very striking histologic likeness. In still other instances he was able to cause a recurrence of the condition by injecting tuberculin intradermally. By this reasoning he explains why tubercle bacilli are in the system. He has repeatedly shown that the tuberculin test is negative before the eruption and strongly positive simultaneously with it.

Wallgren,[15] another prominent investigator in this field, has probably made the most impressive contribution to the tubercular theory. He believes "that the eruption occurs at the end of incubation, a point in time at which allergy to the tubercular infection becomes positive. That the time elapsing between tuberculous infection and allergia should be considered as the real period of incubation. Erythema nodosum seems to correspond to the eruption of the acute eruptive diseases and ought to be considered as the exanthema of tuberculosis." Quoting Wallgren further, "The contention that erythema nodosum is of a tubercular nature is based on fact: (1) That pathologically enlarged hilar shadows are shown by X-ray, and these are expressions of tuberculosis of the hilar glands." He argues that "the first anatomic manifestation of tuberculosis in children is the primary focus with infection of the regional glands. Consequently, in children with erythema nodosum who give a positive tuberculin test, there should be a primary focus from which tubercle bacilli can be eventually detected." On this assumption he gave the children on the day before examination potassium iodide to loosen the secretion. Then the stomach was washed with 200 c.c. of normal saline. This was centrifuged and the sediment injected in guinea pigs. Forty children were thus examined. Of the thirty-seven who gave positive skin tests, he found tubercle bacilli in seventeen, and in these seventeen all had enlarged hilar shadows as shown by X-ray. This work was substantiated by Collis[16] who found tubercle bacilli in three out of five tuberculin positive cases. These facts are probably the most conclusive evidence of the association of the two conditions yet brought forward.

On the other hand, advocating the theory that it is a specific disease entity, Moon[17] and Strauss, of Philadelphia, are the most recent writers (1932). They reviewed considerable of the literature but were not convinced of the tubercular idea. So they did some investigating of their own and cultivated from the subcutaneous tissue in each of three cases of erythema nodosum an organism of the genus Corynebacterium. They also isolated this same organism from the blood in one case. In thirteen of fourteen inoculated animals lesions were produced with the histologic characteristics of this condition, recovering the same organisms in cultures from these lesions. Similar organisms were demonstrated in the lesions from the patients and the lesions from the animals. On this evidence they disavow its association with tuberculosis and think the organism should be called "Corynebacterium cutis nodosae." This is the only instance of any corroboration of the work of Rosenow[18] in 1915, when he claimed to have isolated a diphtheroid organism, with some streptococcal characteristics, from the nodes, and reproduced the disease in animals. Rosenow[19] further considered this organism to have a selective affinity for subcutaneous tissue with the infection atrium commonly in the tonsils and pus pockets about the teeth. He considered "the pain in the subcutaneous nodules due to a hemorrhagic

infiltration and edema surrounding a relatively large blood vessel and the adjoining nerve trunk."

Brooke,[20] in 1933, reported a case complicating chronic ulcerative colitis. One nodule broke down (which is very rare) and he found a gram positive diplococcus here and in the ulcer of the rectum, which were apparently the same.

Other arguments pointing to this being a definite febrile entity are given by Blummer[21] as (1) the occurrence of several cases in the same family; (2) occurrence of groups of cases in institutions; (3) the occurrence of a considerable number of cases in certain districts over a limited period of time. He quotes various British authors in support of this view—Lannois, Anderson, Cooper and W. L. Symes.

The infectious nature of this disease is attested by J. O. Symes,[22] reporting three cases in the same family, and also two cases nine days after a child was admitted to the ward with this condition.

Fox,[23] deals with erythema nodosum under skin diseases, and considers it as a clinical entity.

Symptoms: This disease complex is comparatively rare in children, occurring more frequently in girls than boys, and usually in the spring of the year. There is a history of some debilitating disease followed by malaise and fever for several days to a week, and then the typical eruption; this consists of more or less symmetrical deep-seated nodes over the tibial surface of the legs and the extensor surface of arms. These nodes, or nodules, are reddish to blue, slightly raised and from one-half to one inch in diameter. They tend to be oval with the long axis the same as the extremity. Pain is one of the outstanding characteristics of these nodes. They pass through stages very much like a bruise, turning from red to a dusky blue, at times seeming to fluctuate, but rarely if ever to the point of suppuration. They may occur in crops and last from several days to two or three weeks, usually scaling and leaving a bluish discoloration for several days, but no scarring.

Symmetrical red to bluish red nodules over the tibia and extensor surface of arms, their extremely painful nature, with tenderness to touch; their acute nature, and seldom suppurating, ought to easily differentiate this condition from abscesses, osteomyelitis, gumma, and erythema induratum.

Treatment: The treatment consists in keeping the child at rest, preferably in bed, and the application of soothing lotions, such as calamine lotion. It is self-limited in duration and, if it were not for its potential tubercular aspects, would attract little attention. This possibility, however, should put one on guard, and every means made to detect if there has been a tubercular contact. The child should be tested intracutaneously with tuberculin and, if positive, an X-ray of the chest should be made for possible hilar gland enlargements. These should again be checked after several months to see if calcification has occurred or if any extension has taken place. The patient should be considered as having been exposed to a tubercular contact and kept under observation for potential tuberculosis unless it can be definitely shown to the contrary.

The *prognosis* is good. As previously noted, the nodes disappear after varying periods up to three weeks. Those cases showing tuberculosis, consisting of positive skin tests and pathology in the chest by X-ray, usually have the childhood type of that disease, which is mild, and have good chance for complete arresting of the process provided repeated contact with tuberculosis can be avoided.

During the winter of 1933 and into the spring of 1934 we experienced quite an epidemic of measles in Portsmouth. Characteristic of the epidemic was the fact that the children were very ill with their measles, but experienced relatively few severe complications. Following this siege, I ran into three cases of erythema nodosum within a week's time. These patients lived in separate sections of the city and had measles ten days, twelve days and seventeen days previously. There is nothing unusual in having this condition following measles, for it is seen after any debilitating disease. The fact that the three cases came in so short a period of time aroused my interested and prompted this report.

CASE REPORTS

Case 1.—B. R. C., a girl* of 6 years, who had a severe case of measles early in March, 1934. Two brothers were similarly affected at this time, though neither subsequently developed erythema nodosum. She had been discharged following measles, but on March 15th, I saw her again on account of fever of 103, of two days' duration, with headache and indefinite pains over the entire body. Her physical examination at this time was entirely

*This child (Case 1) died with tubercular meningitis, April, 1935.

negative. Her urine was negative. The next day the typical red nodules appeared over both shins. There were four on each leg and they were very tender and painful. In another day two more nodules made their appearance on the extensor surface of the arms, and one painful area just above the right clavicle. This was more of a gland and was not discolored. Emberg speaks of this symptom in two of his cases. Her temperature ranged from 101 to 103 for ten days, gradually subsiding, as did the nodules. She was kept in bed three weeks. Then a Mantoux test was made, using .05 mgm., and a strongly positive reaction was obtained. In seeking a possible tubercular contact in this case it was found that the child's father had only recently returned from a sanitorium, but had been discharged with a negative diagnosis. However, on April 5, 1934, an X-ray of the child's chest was made by Dr. Fred Barrow, and this is his report: "The thorax is symmetrical; diaphragm is smooth; there is no fluid in either base. The heart shadow is within normal limits. The primary trunks are slightly exaggerated on both sides. There is no definite calcium reaction and there is no evidence of subpleural or parenchymatous infiltration. In the mediastinal area above the aortic level, roughly in the first interspace, there is a rounded shadow that measures 5 cm. in trans-section, suggesting glandular enlargement without evidence of calcification. This does not have the appearance of a thymic enlargement." His conclusion is, "The mediastinal shadow described is most likely due to a tracheobronchial lymph node enlargement. Without evidence of calcification a diagnosis of childhood type of tuberculosis is unwarranted. Subsequent examination would be helpful."

This child is of very frail build and since that time has not been well. Another X-ray of her chest was made October 27, 1934, with this report by Dr. Barrow: "Since last examination there has been definite change in this chest. The enlargement in the first interspace has diminished in size and now measures 3¾ cm. There is no visible calcium deposit in this area. However, there is definite evidence of calcification in the hilus and descending trunk zones of the right chest. The trunks are still quite prominent but there is no parenchymatous infiltration demonstrable in the lung periphery." He concludes that "The diagnosis of a tubercular chest cannot be made with certainty but this chest is very suspicious."

Case 2.—Claire C., age 4 years, had severe case of measles twelve days ago. She was first seen March 20, 1934, at which time the typical nodular rash over both tibial regions and the arms was present. Her temperature was 102 and had varied from 102 to 104. Her W. B. C. was 10,000 and urine negative. In addition to the nodes, about ten in all, she had a good crop of herpes about her lips. Her fever lasted about twelve days, with final subsidence of all symptoms. The only contact here was a tubercular patient, living across the street, with whom there was only occasional association. A Mantoux test, done April 10th, was strongly positive. An X-ray of her chest was made April 21st, with this report by Dr. Barrow: "The hilus and trunk markings are slightly exaggerated, more pronounced on the right side, but there is no outspoken pathology demonstrated in this chest."

Since that time the child has had whooping cough, pyelitis, and her tonsils were removed following a cervical adenitis.

An X-ray of her chest, made October 27th, gives this report: "There has been no appreciable change in this chest since last examination except in the right ascending trunks where there appears to be an effort at calcification."

Case 3.—Charlotte W., age 2 years, had measles seventeen days ago and was first seen March 20, 1934, with typical symmetrical nodes over tibial regions of both legs and on each arm on the extensor surface. These were very painful, causing a very cross and fretful baby, with temperature of 103. Chest findings were negative, and urine was negative. There had been no evidence of sore throat. Her temperature was up and down for fourteen days, but the nodes disappeared in ten days. The only contact found here was that the grandfather had a severe cough. He was sent to another physician for examination and found to be in the last stages of tuberculosis, dying one month later.

The child's Mantoux test, done April 10th, was strongly positive. The mother would not consent to an X-ray at this time. Since then the child has had repeated "colds," and, finally, on November 3rd, an X-ray was made, with this report by Dr. Barrow: "In the left chest, extending from the hilus zone and well beyond the heart shadow there

is a lesion of consolidative density, that roughly extends from the fourth to eighth axillary rib level. The outer boundary extends beyond the trunk limits and is not sharply demarcated. There is no evidence of calcification and no evidence of fluid."

Now the question arises, are these three children passing through a period of tuberculous infection? While not outspoken, all three show definite pathology in the chest by X-ray. All gave postive Mantoux tests and all had possible tubercular contacts. Opinion varies in the conception of childhood tuberculosis. Some would consider these glandular shadows about the hilus as definite evidence of a tubercular process. Others will not commit themselves to an outspoken diagnosis until there is evidence of calcification. Regardless of this point, which to me is rather technical, I think, in the face of a positive tuberculin test and definite contact, the burden of proof lies in proving they are not tubercular. Meanwhile they should be treated as tubercular, and future contact should be avoided as re-infection is a more serious problem than is the primary infection.

Professional Building.

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SOME OBSERVATIONS ON A PHYSICAL SURVEY OF CWA EMPLOYEES IN VIRGINIA.*

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In spite of the fact that the more than forty-seven thousand physical surveys of CWA employees in Virginia were made by 702 physicians of very different training, ability, and conscientiousness, we may learn a little by analyzing some of the findings.

The purpose of the survey was threefold:

First.—The Government desired to place every safeguard around CWA employees by protecting them from sickness and accident hazards. Diseases, injury, and even sudden death had occurred among the employees, some of which could probably have been avoided if disabling defects had been noted and men classified for and placed on work that they were physically and mentally capable of performing.

Second.—To protect the Federal Government from future unjust and unnecessary claims for compensation by determining the physical condition of its employees.

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Third.—The local administration in Virginia hoped that a survey of this kind would be a help to the medical profession, for whom collections had been difficult the last few years, by giving them some work for which they would be paid. It was the desire of the director that the work with its compensation, so far as practicable, should go to physicians who were most in need, assuming that these needy physicians were competent to do the examinations.

A rather complete examination blank was prepared by a medical committee appointed by the State Director of Safety CWA, who was made director of the survey. This committee had the advice and help of a committee appointed by the National Safety Director for CWA.

All the material from the examinations has been tabulated, but only certain portions of it will be used for this paper. There was too much variation in the procedure of different examiners to make some of the material of statistical value.

TABLE I
SHOWING PREVIOUS OCCUPATIONS

Farmers	9,381	Stenographers	510
Skilled laborers	11,641	Students	247
Unskilled laborers	19,742	Nurses	204
Clerks	1,540	Musicians	26
Housework	895	Others	2,960

Table I gives the number of individuals coming from the various occupations. Less than three thousand were women.

Men and women were classified in four groups. Those assigned to Class A were without apparent defects or limitations and were capable of any type of work. Those assigned to Class B were those who were slightly under-developed physically, or had anatomical defects, or other conditions which would not prohibit ordinary work or constitute a hazard to the person, himself, or to others on ordinary work. Those placed in Class C were able to do only light work and required special placement. All those who were not physically fit for any available CWA work or, if employed, would be a menace to themselves, to their fellow workers, or to property, were put in Class D. Persons were also put in Class D who were in good condition except for a temporary disability or a transient condition remediable by a brief period of treatment. These were placed in one of the other classifications as soon as they were relieved of the disability. Acute gonorrhea and syphilis were the principal reasons for assigning people to this group.

There were a total of 47,848 employees examined, of which 47,146 were classified and tabulated.

TABLE II
47,146 EXAMINEES CLASSIFIED

	Class	*Individuals*	*Percentage*
White men	A	21,866	64.84%
	B	8,374	24.83%
	C	3,274	9.71%
	D	207	.62%
	Total	33,721	
White women	A	1,570	66.30%
	B	529	22.45%
	C	265	11.23%
	D	4	.02%
	Total	2,368	
Negro men	A	6,993	65.22%
	B	2,509	23.40%
	C	1,115	10.40%
	D	105	.98%
	Total	10,722	
Negro women	A	208	62.08%
	B	83	24.78%
	C	44	12.14%
	D	0	0%
	Total	335	

Table II shows the classification of men and women, white and colored.

TABLE III
CWA EMPLOYEES CLASSIFIED WITHOUT REFERENCE TO SEX OR COLOR

Class	*Total*	*Percentage*
A	30,637	65.00%
B	11,495	24.00%
C	4,698	10.00%
D	316	.67%

Table III shows the classification of the entire group without reference to sex or color. Most series of physical examinations of men applying for industrial employment will show a larger percentage unfit for any work.

All the findings in this survey have been tabulated but only those in which the recorded findings are likely to be close to what a smaller group of uniformly trained physicians would have reported are used in this paper.

Inguinal hernias for the men are tabulated here. The statistics for the women are not included because there were not adequate facilities for examinations for hernias in the average examination center used for the women.

Hernias increase in frequency, as would be expected, with the advancing age groups. There was a frequency of 1.4 per cent in the men under twenty-five to 9.9 per cent in the men above forty-five.

TABLE IV

HERNIAS IN WHITE AND COLORED MEN

Age Group	WHITE MEN				COLORED MEN			
	Individuals	*Hernias*	*Percentage*	*Trusses Worn*	*Individuals*	*Hernias*	*Percentage*	*Trusses Worn*
15-24	5,617	77	1.4%	9	1,369	20	1.5%	0
25-34	8,203	183	2.2%	51	2,385	56	2.4%	13
35-44	8,530	417	4.8%	130	3,114	109	3.5%	31
44 and over	11,361	1,195	10.5%	506	3,849	254	6.5%	78

Table IV shows a number of the findings on the inguinal hernias. There were 2,001 single and 310 double hernias, or a total of 2,311 in 44,418 men. The white men showed a higher percentage of hernias than the colored in the age groups past thirty-five. The total percentage for the entire group was 5.7 per cent. For these 2,311 hernias, there were 819 trusses worn. The per cent of hernias supported by trusses increased with advancing years.

Table IV shows total men, according to color and age groups, examined with numbers and percentages of hernia and trusses worn.

Table V shows the total number of men in each age group with single and double hernias, with percentages for totals, and the number of trusses worn.

Varicose veins were recorded. There was an increase in the cases from 0.8 per cent in the age group under twenty-five to 6.1 per cent in that above forty-five. Excepting for the first age group, the condition was more frequent in the white women than in the white men. After thirty-five years, the colored women's rate was higher than that for white women. The number of colored women examined

TABLE V

ALL MEN CLASSIFIED FOR SINGLE AND DOUBLE INGUINAL HERNIA

Age Group	*Individuals*	*Single*	*Double*	*Total*	*Percentage*	*Trusses Worn*
15-24	6,986	89	8	97	1.4%	9
25-34	10,588	218	21	239	2.3%	65
35-44	11,644	456	70	526	4.5%	161
45 and over	15,200	1,238	211	1,449	9.9%	584
All ages	44,418	2,001	310	2,311	5.7%	819

TABLE VI

VARICOSE VEINS

	15-24 Age Group			25-34 Age Group			35-44 Age Group			45 and Over Age Group		
	Individuals	*Varicose V.*	*Percentage*	*Individuals*	*Varicose V.*	*Percentage*	*Individuals*	*Varicose V.*	*Percentage*	*Individuals*	*Varicose V.*	*Percentage*
White men	5,620	56	.9%	8,207	133	1.6%	8,530	313	3.7%	11,364	790	7.0%
Colored men	1,369	7	.5%	2,387	22	.9%	3,117	64	2.0%	3,849	123	3.2%
White women	748	3	.4%	640	28	4.4%	564	24	4.3%	416	43	10.3%
Colored women	64	0	.0%	84	0	.0%	90	6	7.0%	93	12	13.0%
Total	7,801	66	.8%	11,242	183	1.6%	12,301	407	3.3%	15,722	968	6.1%

was so small that the figures are not significant. Table VI can be seen for more details.

Blood pressure was required on all employees forty years of age and over. In our tabulations, we made the age groups in ten-year periods ending with fours and beginning with fives. For this reason, we have taken for the blood pressure study only those forty-five years old and over. In this group of men and women, including both white and colored, 30¼ per cent were found to have a systolic blood pressure of 150 or more; 17.37 per cent were between 150 and 175, and 12.88 per cent were above 175. The white men with blood pressure of 150 or above were 26.9 per cent, the colored men were 40.63 per cent, the white women 23.53 per cent, and the colored women 39.78 per cent. The writer thinks the blood pressure appeared higher than it actually was. Many of these employees coming before the doctors were badly frightened, thinking they would be thrown out of employment, or for other reasons, such as a report going around among the colored people in Richmond that they were being drafted for military service. This could easily have raised the blood pressure in many cases.

It is interesting to note in a state where vaccination against smallpox has been practically compulsory for years, that only 65 per cent of these people had ever been vaccinated. In the age group 15-24, 73.42 per cent had been successfully vaccinated. In the 25-34 age group, 62.65 per cent had been successfully vaccinated. In the 35-44 age groups, 69.73 per cent had been successfully vaccinated. In the 45 and over age group, 59.29 per cent had been successfully vaccinated. The women were better protected than the men in every age group. The white women averaged a higher percentage of protection than the colored women, and the white men than the colored men. The men from the cities averaged a much better protection than those from the country. Of the rural white men in the 15-24 age group, 68 per cent were protected as against 90 per cent in the urban. Of the rural white men in age group 25-34, 56 per cent were protected as against 82 per cent in the urban. Of the rural white men in the age group 35-44, 74 per cent were protected as against 90 per cent in the urban. Of the rural white men in age group 45 and over, 59 per cent were protected as against 85 per cent in the cities.

Immunization against typhoid fever the last five years was reported in only 10 per cent and only 29 per cent had ever had typhoid vaccine. The highest per cent receiving typhoid vaccine at one time or another was shown by the age groups of 35 to 44. Here 48.5 per cent had received protection. Many of the men in this age group were drafted for the army in 1917 and 1918 and immunization while in the army accounts for this showing. This experience seems to have been of little educational value to them, however, since only 8.4 per cent of this group have had immunization the last five years as contrasted with the 10 per cent average for all age groups.

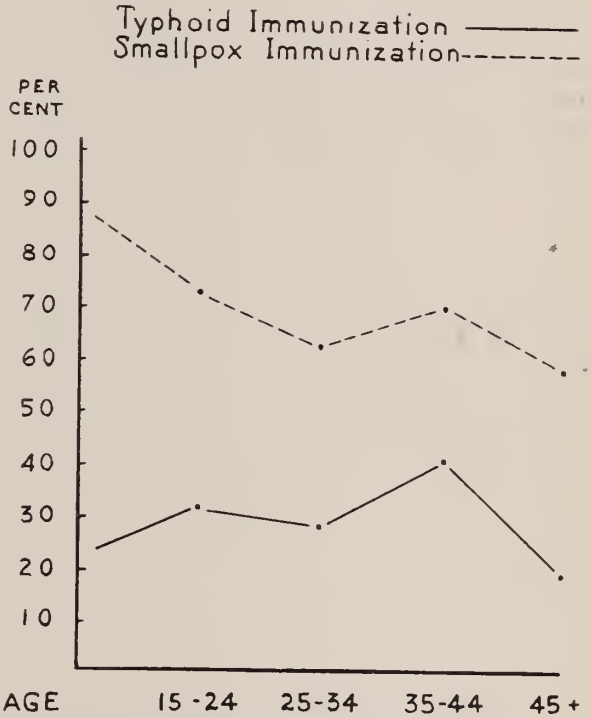

Plate showing percentages by age groups immunized against Typhoid Fever and Smallpox.

Of the ten counties in the State of Virginia showing the highest morbidity rates from typhoid in 1933, six were in the southwestern part of the State. The immunization rate in the employees examined in that section showed 11 per cent having received inoculation against the disease within the last five years.

On the Physical Survey Blank, in addition to the questions about smallpox and typhoid immunizations, there were only a few questions relating to history. One of these was, "Have you been sick or consulted a doctor in the last five years?" This was answered in the affirmative by 7,448 white men

and in the negative by 24,075. Of the colored men, 1,723 answered in the affirmative and 8,421 in the negative. This means a little above 23 per cent of the white men and 17 per cent of the colored men had consulted a physician in five years' time. With the white women, 1,076 answered in the affirmative and 1,250 in the negative, or more than 46 per cent. Of the colored women, 129 reported in the affirmative and 182 in the negative or more than 41 per cent.

In commenting on the above, it is well to remember that many of the people who had actually consulted a physician within the last five years had forgotten it. Allowing that half of those consulting a doctor had forgotten it and assuming that our findings are representative of the people of the State, we still would have nearly a half of our male and more than 25 per cent of our female population not consulting a physician professionally in five years' time.

DISCUSSION

In looking over the mass of material tabulated from the survey of the more than 47,000 men and women in the State of Virginia, it was realized that much of the material was of little statistical value. Certain procedures were not uniform enough to make the findings of value, but other procedures were. It is very evident, however, from the findings that many people are not using physicians as freely as they would were they receiving adequate medical care. One out of every ten men, 45 years old and above, with hernias, two out of every three of these hernias were not properly supported; 10 per cent of the older age group of white women and 7 per cent of the white men had varicose veins; three out of ten, 45 years old and above, had a blood pressure above 150; 35 per cent of the inhabitants of the State were not vaccinated against smallpox, and only 10 per cent had been immunized recently against typhoid fever; 77 per cent of the white men, 85 per cent of the colored men, 54 per cent of the white women, and 59 per cent of the colored women not consulting a physician within the last five years bear eloquent testimony to a physical level far below that which might be attained.

Where the fault is, is not the writer's to say. Certainly, our knowledge of the science of medicine and the prevention of disease is advanced far beyond our application of this knowledge to human needs.

These findings remind us of the need for health examinations for the average individual. We hear that there is an overproduction of physicians. If these findings are representative of what you would find in Virginia, and the writer thinks they are because of the large numbers involved and the State-wide distribution of the people examined, every city and county in the State being represented, then many more physicians than are now living in Virginia could be used in keeping the people healthier and happier.

The question of economics, of course, comes in. How is adequate medical care to be paid for? The writer is not attempting to answer that.

ACUTE COLLAPSE OF THE LUNG WITH COMPLICATIONS DUE TO PRE-EXISTING PATHOLOGY.

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Atelectasis or collapse of the lung was first recognized by Louis[1] in 1829. It was first carefully described and differentiated from pneumonia by Gairdner,[2] in England, in 1850. In 1890, Pasteur,[3] of London, revived interest in this condition by emphasizing its frequency as a post-operative complication. After the World War Sir John Rose Bradford[4] reported many cases following gun-shot wounds of the chest wall. In spite of this work no cases were reported in this country until 1921 when

Scrimger[5] reported seven post-operative cases. The demonstration of its cure by bronchoscopic aspiration by Jackson and Lee,[6] in 1925, led to the general acceptance of its importance by the profession in this country. Cases previously overlooked or diagnosed as pneumonia are being reported in increasing numbers following operations, fractures of the pelvis or femur, after trivial injuries, and occurring spontaneously.

Numerous theories have been advanced to explain the etiology of atelectasis. Leaving out of consideration those cases caused by compression by air (pneumothorax) or by the fluid of pleural effusion, the present concensus of opinion favors bronchial obstruction by a tenacious plug of mucus as the cause of collapse. Factors which diminish respiratory movements and abolish cough, such as pain, paralysis of the respiratory muscles, inhibition of respiration from general cachexia, recumbency or narcotics, are accessory causes. A bronchus may be obstructed by a tuberculous condition or neoplasm, the lung or a portion of it supplied by the obstructed passage collapsing as the air is absorbed by the aveolar capillaries.

Diagnosis. The symptoms are variable, but we should expect pain in the chest, cough, expectoration, rapid shallow breathing and cyanosis, with elevation of temperature in cases developing suddenly. There may also be elevation of temperature and pulse rate without respiratory symptoms. The physical signs are important. There is flattening of the chest on the affected side with retraction of the interspaces. The trachea and heart are drawn to the affected side and the diaphragm of the same side is elevated. There may be dullness with diminished breath sounds over the lobe involved, or bronchial breathing and crepitant rales may be found. The physical signs may change rapidly when coughing or change of position dislodges the plug, this variability being characteristic. The final diagnosis is determined by the X-ray.

In the case herein reported there was considerable confusion due to the pre-existing condition causing flattening of the chest and displacement of the trachea, etc., toward the affected side prior to the occurrence of the atelectasis.

L. M. W., native American, white, male, married, age 24, height 5 feet 8 inches, weight 141 lbs., was examined for employment as a laborer on a construction job June 21, 1934. Upon baring the chest there was at once apparent a diffuse cardiac impulse on the right side, so evident that it could not escape detection. The man, seeing that the examiner had seen this impulse, grinned and said, "Dextrocardia," and stated it had been found three years previously by a physician who exhibited him before a medical society in Washington. The upper right chest was slightly flattened; the apex beat was diffuse, with point of maximum intensity apparently in the right fifth intercostal space and 3½ inches from the midline. B. P. was 130-80 and pulse 76. There were no murmurs or other abnormal heart sounds and no irregularities. Lung sounds were apparently normal. The other viscera appeared normally located. The man was left-handed. Remainder of physical examination, including Kahn test and urinalysis, was negative. His past history was entirely negative except for an attack of influenza three years previously. He performed his work for two months without incident.

About 9 A. M., August 21, 1934, he reported at the plant First Aid, saying he had received a blow on the left chest about the second intercostal space a few minutes previously and he could not get his breath freely. Said a man on a floor above him handed him down a piece of timber six inches by eight inches by sixteen feet and as he caught the lower end the man above released his hold causing the timber to strike his chest.

Physical examination revealed on inspection that he evidently was in pain and kept his hand on his chest at the point of the alleged blow. There was a cutaneous bruise on the anterior surface upper left arm. No discoloration made out on the chest. Tender at location of the blow. There was some difficulty in breathing, which appeared largely voluntary. Said he had been coughing and spitting some blood.

Examination at this time revealed a well-nourished young man. Neither cyanosis nor pallor was present. The temperature was 96, pulse 100. Blood pressure 116-72, weight 138 pounds. While being examined, the patient coughed and raised some thick, blood-stained purulent material, a specimen of which was sent to the State Board of Health Laboratory and later reported negative for tubercle bacilli. It was evident that something acute had occurred. He was given a hypodermic of morphine, gr. 1/4, and

atropine, gr. 1/150, and removed to the hospital.

Upon examination at the hospital the temperature was 99.8, pulse 90, respirations 24. He continued to cough and raise the same blood-stained, purulent sputum. There was diminished expansion of the right chest with flattening of the same side, the flattening having been noted two months earlier on original examination. Fremitus was diminished slightly over the right apex and rather sharply over the right base. Breath sounds were distant over the right apex and practically absent over the right base. The left chest was hyperresonant throughout. The leukocyte count was 11,900. A specimen of the sputum was sent to the hospital laboratory and a third sent to the State laboratory. In all, seven specimens of the sputum were examined and all reported negative for tuberculosis.

The patient continued to complain of pain in the left upper chest, keeping his hand on the spot of the alleged blow. He was X-rayed, after an admission diagnosis of left-sided pneumothorax had been made. The location of the pneumothorax on the left side was interesting in view of the X-ray report which was: "First examination showed a hyper-aeration or acute emphysema of the left lung. The middle lobe of the right lung showed atelectasis with apparent partial collapse of the right lower lobe accompanied by a small amount of pneumothorax. There was no heart shadow on the left side, and because of the density of the structures on the right the heart was not definitely visualized. The trachea and mediastinal structures were markedly displaced toward the right. The right diaphragm was elevated and its excursion markedly diminished." Normal location of the other viscera was confirmed.

The patient was put to bed and sedatives ordered. For four days he ran a temperature of 100 to 102 in the afternoon with morning remissions to 97. On several occasions morphine had to be administered for pain. An attempt to get the patient to roll from side to side as has been used in treating these cases resulted in such alarming symptoms of dyspnea and collapse that it was not repeated. After four days the temperature returned to normal and there was gradual improvement in all the symptoms, the right lung slowly returning to activity. This was accompanied by the development of about every known variety of rales over the right chest, particularly at the base. An area at the angle of the right scapula strongly suggested pneumonia with bronchial breathing and crepitant rales. Also the X-ray revealed the trachea, etc., slowly returning toward their normal location, though they only returned slightly, for reasons as shown later. At times the entire chest was filled with such rales as to strongly suggest asthma but the patient stoutly denied that he had ever had asthma. The variations in the chest sounds from day to day were really remarkable.

When this man's history was taken at the hospital he stated that the dextrocardia had first been discovered when he was seven years old, and that at the age of ten he had a bilateral pneumonia, being ill for a long time. This was in direct conflict with his history as given at the time of his original examination. He also stated that he had consulted a physician in Washington three years previously for a cold. This physician sent him to a hospital where he was paid to stay a few days for observation by students, and that fluoroscopic studies of his chest had been made. Inquiry of the hospital brought two reports of the X-ray study. The first one, dated April 25, 1932, was: "The patient has a congenital deformity with a dextrocardia. The entire heart and vessels are on the right side. There is displacement of the trachea into the right chest. The outline of the heart is very indefinite. There is no fluid in either chest space." The second report, dated four days later was: "I will change my opinion and state that the heart, mediastinal structures and trachea are pulled to the right by dence, firm adhesions of the middle portion of the right lung. The heart is small, centrally placed, and pulled to the right. The apex is pulled beyond the left border of the vertebrae. There is marked thickening of the pleura and increased density with fibrous adhesions in the right chest. Diagnosis: Displacement of the heart and mediastinal structures to the right."

The further progress of the case was uneventful, the symptoms and physical signs gradually improving until September 4th when the patient was discharged from the hospital.

It was believed that being occupied would expedite this man's recovery, so on September 5th he was given nominal work to do, sitting down and free from physical effort and made out very com-

fortably. He left the plant at 4:30 P. M. in very good shape. About 9:00 P. M. we were called to see this man at his home. He appeared to be in great distress. He complained of pain in the left chest and said he had had a chill. His temperature was 102, pulse 140 and respirations 40. There were coarse, bubbling and squeaky rales over the entire chest. Morphine and atropine were given hypodermically and the patient removed to the hospital. At 10:00 P. M. in the hospital the lung sounds had almost entirely cleared up, only to light up next morning with return of symptoms. Ephedrin failed to give any relief and adrenalin gave very little. X-ray showed that there was no return of the atelectasis and the patient was discharged a few days later as well. He was placed on light work and for two weeks daily observation made of morning and afternoon temperature, which did not rise above normal. The pulse rate also remained normal.

From October 1st to November 6th frequent but not daily check of temperature and pulse failed to reveal abnormality. During this time the man had frequent unexplained absences, these always occurring the day after pay day, until he was forced to leave his boarding house because of drunkenness. On November 8th he informed us that the weather was getting too cold for him and he was leaving for Florida, which is the last we have heard of him.

While it was evident there had been some truma, a careful investigation established the fact that the accident described by the injured could not have occurred. He could not identify the man who according to his story handed him the timber. No one in the gang in which he was working knew anything about such an incident, and a check-up revealed that there had never been such a timber as he described on the job. There was, however, a very definite bruising of the left arm and marked tenderness on the left upper chest. He never complained for a moment of the right chest but always located his pain on the left.

Shortly after this case was completed, another man presented himself with a dextrocardia. Needless to say his examination was very carefully done, and we established the fact that this case was a true dextrocardia with complete transposition of viscera, his appendix having been removed from the left side, which was verified.

CONCLUSIONS

This case illustrates how much pathology there can be in a chest without its being detected unless X-ray is used. No abnormal lung condition was made out on the original examination, though the X-ray two years previously had demonstrated that there was pathology. Naturally the question arises, "were we not so interested in the dextrocardia that we missed the lung condition?" We think not, because immediately following the alleged injury when attention was definitely focused on the lung we did not find any changes, though some two hours later they were quite evident.

This man evidently had (1) an old deformity of the right lung, etiology unknown; (2) super-imposed on this was an acute atelectasis of the same side; (3) recovering from this, another acute condition, apparently not related to either of the foregoing, developed; (4) the dextrocardia was an acquired and not a congenital condition, linked up with whatever produced the lung deformity.

The role of tuberculosis in the causation of this condition is well known. As atelectasis follows very trifling injuries not necessarily confined to the chest area and may occur spontaneously, it would appear probable that it occurs more frequently than it is recognized. Two other examiners, without seeing the provisional diagnosis or the X-ray report, diagnosed a left-sided pneumothorax, only to be astonished when they saw what the X-ray revealed.

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END-RESULTS AFTER INTERNAL FIXATION OF TRANSCERVICAL FRACTURES OF THE FEMUR.*

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Three years ago, before this Society, I reported a new operation for fractures of the neck of the femur. I am very proud of the fact that the first report of the operation was presented before this Society, and that I now have the opportunity to present for the first time some end-results following the use of this operation.

Not many years ago, Dr. Whitman, of New York, described his method of reducing fractures of the hip and fixing them in plaster casts. This was a most welcome change from the sand bag and expectant treatment, and it rehabilitated many. This method of cast-fixation has been used more extensively than any other in treating fractures of the hip, but in the future I believe its use will be more or less restricted to those fractures involving only the trochanter or upper end of the femur.

The disadvantages in the use of the plaster spica in fractures of the neck of the femur are many: The individual is rendered inactive at a time in life when active use of each member is necessary to the prevention of stiff joints. The reclining position always predisposes to a hypostatic congestion and pneumonia, which so often proves fatal in these cases.

In 1928 the American Orthopedic Association appointed a commission to study the end-results of fracture of the neck of the femur. They found union present in 20 per cent of the treated cases above sixty years of age. I have often wondered what the reaction of the individual would be if told that after three to six months in a massive cast they would have one chance out of three of ever walking again, and one chance in four of dying as a result of the treatment.

There is little wonder that we have tried to produce some method that would decrease the morbidity and mortality rate while trying to rehabilitate these old people.

For several years, fractures with non-union following the cast treatment have been successfully treated by opening the hip joint, cleaning the fractured ends of the bones and holding them together by an instrument through the center of the neck of the femur. This method has been known as the internal fixation of fractures of the neck of the femur, and its results have been superior to any known method of external fixation including casts, splints, traction or sand bags. However, because of the shock attending the major operation of opening the hip joint, the usefulness of the operation has had to be restricted to a chosen few who were able to withstand the effects of the operation.

In the past, attempts have been made to transfix the broken fragments by passing an instrument, usually an iron nail, through the center of the neck of the femur either with or without a small incision over the trochanter. Though attempted by many, the operation soon fell into disrepute because roentgenograms showed the nail more often in the soft tissues than in the bone. These patients had been taken to the operating room and a nail blindly driven in without taking into consideration the two angles of the neck of the femur, for, in the average individual, when the feet are placed side by side, the femoral neck points forward as well as upward. In each person, unless there previously existed some

*Read before the Southwestern Virginia Medical Society, March 22, 1935.

disease or injury, the two hips are correspondingly the same, and by determining the angles of the normal hip, we are now able to guide the instrument of fixation into the fractured hip after reduction is accomplished.

In January, 1932, with the use of the X-ray, I found it relatively easy to determine the exact number of degrees the neck is set forward in the individual case. By turning the leg *in* the required number of degrees, the neck would be made to point to the center of the pelvis instead of forward. This was the solution of one-half of the problem. The next step was to determine the angle of the neck with the shaft of the femur. A protractor was made that would give the upward angle of the neck when superimposed over the roentgenogram of the hip.

Within the past three years, this method of treating fractures of the femur has been accepted more or less as the method of choice, either in its entirety or with certain reservations. At no time prior to the use of this operation had internal fixation of the fracture been practiced without incorporating the patient in either a cast or brace for a period of from a few weeks to several months. It was definitely proven that external fixation was not only unnecessary but detrimental both physically and mentally to the progress of the patient. In doing away with this fixation, the operation has more or less revolutionized the care of these aged individuals.

As is the case with all new procedures, the operation has been accepted in its entirety or with certain changes in part to suit the individual operator. Especially is this true when the surgeon feels the necessity of simplifying the determination of the two angles of the neck of the femur. Though I have reviewed many such methods, any change to simplify the procedure has been at the expense of some detail which either lengthens the operative time or makes problematical the course of the fixing instrument in the neck of the femur.

Since 1932 I have seen and operated upon thirty-three cases of fractures of the hip, and I wish now to again thank those physicians who at an early date were able to appreciate the inherent qualities of the operation and so kindly furnished the cases. Because of their kindness in referring these patients, and with the hope of making these elderly individuals more comfortable, the operation has been employed in all cases, irrespective of age or physical condition.

The age of the patient seems to influence very little the question of union. The lack of cooperation, due to mental change, is much more likely to influence the end-result. In three cases, because of this lack of cooperation and too early weight-bearing, a non-union resulted. One of the three was successful after a second operation. Case 2 has a non-union after the second operation, while in Case 3 a second operation was not attempted because of mental degeneration. One patient, age 82, had a firm union for two years, both clinically and roentgenologically. This was probably a fibrous union, as there was a recurrence of the fracture following slight trauma. There results one case of non-union following the operation and two cases of non-union following the lack of cooperation.

Because of the small amount of shock incident to the operation, the family physician or internist referring the cases have insisted on the hip being fixed as a possible means of prolonging life. Though we feel that we have been successful in most of these cases, there have been three deaths. The first death was in Case 8. This patient, age 62, had been bed-ridden for eighteen months. She fell from the bed and fractured her left hip. She was extremely septic from a large decubitus over the sacrum and the operation was performed to permit turning in bed to relieve pressure on the bed sore. Death resulted from sepsis on the tenth day.

The second death was in Case 20, a male, age 84. He had marked myocardial changes and a severe arteriosclerosis and generalized arthritis. His death resulted, three weeks after operation, from an acute dilatation of the heart.

The third death was in Case 24, age 76. This patient was showing signs of a uremic poisoning before operation, but was operated upon at the insistence of the internist and died thirty-six hours later.

One of my most interesting cases was Case 27, a female, age 89. She was admitted with a fractured hip and a bronchial pneumonia. The operation was performed under novocain anesthesia and the patient was able to enjoy an automobile ride four weeks from the date of the operation.

By carefully choosing cases for the operation, I feel it would have been possible to at this time re-

port a good number with perfect end-results and without a death in the series. I am confident there have been no deaths either directly or indirectly attributable to the operation; however, the three deaths following the operation have herein been reported.

Many of these patients who sustained fractures of the hip are now enjoying a ripe old age, with good functional results following the operation. However, had we been interested alone in end-results, these patients would never have been considered as operative risks and probably would have had an early demise, or else be a total loss because of non-union of a fractured hip.

THE EARLY DIAGNOSIS AND SPECIFIC TREATMENT OF LOBAR PNEUMONIA.*

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Until very recently lobar pneumonia was the only infectious disease that had not responded to improved methods of treatment so that its mortality rate had remained unchanged for years. This rate of 33 per cent was fairly constant whether the patient was treated in a hospital under ideal conditions or in a home under poor conditions. Now, however, it is possible to lower the mortality rate to 10 per cent and 15 per cent, respectively, in patients infected with types one or two pneumococci,[1] and, as the majority (66 per cent) of all acute lobar pneumonia is due to these two types, one can easily see the benefits to be derived from using specific therapy. These facts are borne out by large well-controlled series of cases in many localities.[2-3-4-5]

However, several important criteria have to be observed in the successful specific treatment of pneumonia as its usefulness is definitely limited. First and foremost of these is that the diagnosis must be made fairly early in the disease so that the type of the invading pneumococcus can be ascertained and treatment begun early. Second, the type of the pneumococcus responsible for the infection must be one for which we have a potent homologous antiserum.

It has been shown that the earlier specific therapy is begun the more successful it is, and seventy-two hours from the onset, as judged usually by the occurrence of a chill or pain in the chest, has been considered the deadline, but, with the more potent sera of today, the time limit has been extended to ninety-six hours.

*Read before the Warwick County Medical Society, November 12, 1934.

From the above, one can readily see that successful specific therapy first hinges on the early diagnosis of the disease, so let us consider the early symptoms and signs of lobar pneumonia. The diagnosis of a typical case will be easy. The chill and sudden onset with a high fever, pain in the chest, cough, dyspnea without orthopnea, dilatation of the alae nasi on inspiration, the expiratory grunt, bloody, rusty or prune juice sputum, dullness at the base of the lung, tubular breath sounds, crepitant rales and a leukocytosis, all, give a classical unmistakable picture of the disease. Unfortunately, it is not always so typical and one should not hesitate to diagnose it on one or two of these cardinal symptoms and signs, at least suspecting it early so that the laboratory or roentgen ray may be used to differentiate it from similar illnesses.

The early symptoms of lobar pneumonia are varied and simulate many diseases, as peritonitis, acute rheumatic fever, trichiniasis, tuberculous pleurisy, and acute appendicitis (especially in children). The differential diagnosis is not always easy and occasionally the history and mode of onset give the only clues until the laboratory or roentgen ray can be utilized for final proof.

The onset of lobar pneumonia occurs in one of three ways:[6] First, it may begin typically with a chill, pain in the chest and a high fever. Frequently in this type of onset there is a history of exposure to cold, excessive fatigue or acute alcholism. Second, it may begin following an indefinite period of chronic cough, coryza or malaise, when, with no warning, the patient suddenly becomes

worse. A history of some moderate exposure, as "working off a cold," is often obtained in this type of onset. Third, the patient's symptoms may gradually become worse, following a common cold, during an attack of congestive heart failure, or following a surgical operation, so that the time of onset cannot always be definitely determined. Older patients or debilitated ones tend to have an onset like this.

The common early symptoms of lobar pneumonia, as revealed by a study of 770 admissions to the Rockefeller Institute in New York City, were as follows:[6]

75 per cent had pain in the chest.
62 per cent had had a chill.
27 per cent had vomited.

Other symptoms less common were respiratory distress, cough, weakness, syncopal attacks, vertigo, and occasionally, but rarely, convulsions (except in children).

The early signs of lobar pneumonia are more typical and constant than the symptoms, and, in deference to the oft-quoted statement that "the earlier clinicians were keener observers," we will look to them first for these signs.

Since the invention of the stethoscope, over 100 years ago, crepitant rales, likened so aptly to the sounds produced when a tuft of hair is rubbed between the fingers, have been considered pathognomonic of lobar pneumonia. Laennec and others of his time believed that this rale was the only early sign heard in pneumonia, and that it was only heard in this disease,[7] but we now know that this is not true, for the crepitant rale is heard as well in the presence of pulmonary infarcts, atelectasis, and sometimes in pulmonary tuberculosis; also, it is not always heard early, but may be heard only late in the disease, when resolution is beginning.[8]

Tyson[9] in 1896 gave the following early signs of lobar pneumonia: high pitched percussion note; diminished breath sounds; subcrepitant, coarse and sibilant rales.

Pye-Smith[10] and Anders,[11] writing a few years later, gave the same signs.

Connor and Dodge[12] analyzed the early signs found in 392 cases of lobar pneumonia, and found an impaired or tympanitic percussion note, feeble breath sounds, crepitant rales and increased vocal resonance, all fairly constant signs. This work, done thirty years ago, is still quoted in present-day textbooks.

Among contemporary physicians the earliest signs noted are suppression of breath sounds, moist rales, increased vocal resonance and whispered pectoriloquy.

As an aid to the early diagnosis of lobar pneumonia, the laboratory plays an important part, for a leukocytosis is an early and constant finding, except in extremely weak or debilitated persons. However, the leukocytosis may be moderate or even absent in the presence of overwhelming infection. Examination of the sputum both grossly and microscopically is as important as a differential and leukocyte count, and should be done routinely in all cases of suspected pneumonia. The characteristic sputum of lobar pneumonia is tenacious and usually at first blood-streaked as in a tuberculous hemoptysis; later it becomes brownish, rusty or prune juice in color, at which stage it is pathognomonic of the disease. Caution in obtaining the sputum for microscopic examination or typing is necessary, for, if one depends on sputum obtained by an untrained person it will usually be found to be valueless as it will contain mostly nasopharyngeal secretions, oral detritus and even food particles. Nevertheless, if the physician or trained technician gives the following instructions, a specimen will be obtained which shows the organisms responsible for the lung infections in what appears to be a pure culture: First, have the patient rinse the mouth with water and clean out the nasopharynx before coughing, and, second, always have the patient raise bronchial secretions. The pneumococci are easily differentiated from the streptococci and the staphylococci can be identified by culture or bile insolubility when necessary. Typing, when possible, should be done on all suspicious as well as positive sputa.

Another aid in the early diagnosis of lobar pneumonia is the roentgen ray. This diagnostic aid has been infrequently utilized because of the necessity heretofore of moving a very sick patient. However, today there are portable and mobile X-ray units that take good chest films with the patient in bed at a hospital or even at home. The X-rays reveal beginning consolidation very early in the disease, and, as in adults, the consolidation is at first central,[13] it is usually possible to pick up this pathol-

ogy on a film before the physical signs can be detected. Films taken later show that the consolidation rapidly spreads toward the periphery, occasionally in as short a time as twenty-four hours. Graeser and others,[14] in a study of serial films on forty lobar pneumonia cases, found, however, three days to be the usual time before complete consolidation was established.

To summarize the facts in the early diagnosis of lobar pneumonia one should first remember that a positive diagnosis can only be made bacteriologically by the identification of pneumococci obtained from material from the lungs, from the blood stream, or from pleural exudates. Using only the clinical course, the early signs or even the roentgen ray, it is obviously impossible to select cases suitable for specific therapy; but one should remember that no other type of pneumococcus, except I and II, gives the typical signs of lobar pneumonia with the regularity these two do. The age of the patient is also an aid in clinically diagnosing pneumonia for which there is specific polyvalent therapy, as types I and II occur more frequently in the second, third and fourth decades. However, with the comparatively easy and rapid methods of typing now available, it should rarely be necessary to subject a patient to therapy needlessly.

Several methods for rapid pneumococcus typing are in use today. Each method has certain advantages over the other, and a brief review of them will be self-explanatory.

The Neufeld method is probably the easiest and most rapid. This test depends on the fact that the pneumococcus capsule swells when mixed with homologus rabbit antiserum. Fresh sputum should always be used in this test (not over two hours old). This method can also be used on fresh pus or positive blood cultures. Its technic is very simple: three flecks of sputum are placed on a slide and each is thoroughly mixed with one of three types of antisera and a dilute solution of methylene blue. A cover slip is placed over each to prevent drying and they are examined with the oil immersion lens. The presence of swelling in the capsule of only one pneumococcus is enough to make a diagnosis. This method is fairly accurate, and one can attribute most of the failures to poor sputum. Usual time for test is one-quarter to one-half hour.

The Sabin slide agglutination method is not so rapid but slightly more accurate, especially when the sputum specimen is poor or contains few pneumococci. About one-half cubic centimeter of sputum is made into a smooth consistency and injected into the peritoneal cavity of a white mouse. This animal is very susceptible to the pneumococcus and the pneumococci will outgrow other bacteria. After three hours, the peritoneum is punctured with a capillary pipette and a small amount of the exudate removed. This is placed on a slide in three small drops, each of which is mixed with the typing sera of one of the three predominant types of pneumococci. The smear is allowed to air dry, then is fixed with heat and stained by Gram's method. If agglutination is present, it is easily detected with the microscope and the bacteria will be clumped in small islands, whereas, in a negative reaction the bacteria should be evenly distributed over the field. Usual time for this test is three to four hours.

A third method, the Krumwiede, is rapid and accurate, but requires a large amount of fairly characteristic sputum. This test depends on the specific soluble substance of the pneumococcus, liberated when the sputum is coagulated Ten cubic centimeters of the selected sputum is placed in a centrifuge tube which is set in boiling water for five minutes in order to coagulate it. This frees the specific soluble substance which collects at the top after the whole mass is centrifuged, and can be withdrawn for use in a precipitation test. This test, while accurate, probably requires more technical skill as well as a large quantity of sputum, often very hard to obtain from a patient who has a pleurisy restricting his cough. Usual time for test is one-half hour.

The treatment of lobar pneumonia has been the object of a great deal of research and investigation for several years. Many methods have been tried, but each after a short while has been discarded when controlled experiments showed it to be of little value in lowering the mortality rate. Some are worthwhile and probably should be used in cases not suitable for specific therapy, but no one has shown any results with them comparable with specific therapy, and, they should only be used as a last resort in most instances. To evaluate these nonspecific methods is not within the scope of this paper; however, the following few will be mentioned: intravenous bile salts; diathermy; artificial

pneumothorax; hypertonic solutions of glucose intravenously; the introduction of substances to increase the leukocyte count, and oxygen and carbon dioxide inhalations. Of these, glucose and oxygen deserve the most use as they are of proven merit in the auxiliary treatment of all types of pneumonia.

In the specific treatment of lobar pneumonia, two antisera are of definite value, and a third for type seven is available; also, as more is learned about the clinical course of the group four pneumonias, antisera will be developed for the more virulent ones of these.

At present it is possible to identify and type every case of pneumococcic pneumonia, as all thirty-two types of diagnostic sera are available, but, as the mortality rate in the group four pneumonias is very low except possibly in types five and seven, other sera than these will be slow in developing.

Today, several reputable firms make type one and two monovalent and polyvalent antisera, refined and concentrated according to the method of Felton. This is dispensed in syringes containing 10,000 and 20,000 units each, at a cost within the reach of all except possibly indigents, and this cost is gradually being lowered.

After the clinical and bacteriological diagnosis has proven a case suitable for specific therapy, the patient should be tested with some of the antiserum that is to be used in the treatment, so that unfortunate allergic reactions will not occur. The most practical method for testing a patient is as follows: with a tuberculin syringe draw up about 0.2 of a cubic centimeter of the antiserum. Then, with a 25 or 26 gage needle, inject about 0.05 of a cubic centimeter intradermally into the anterior aspect of the forearm; following this, remove the needle and instill a drop into one conjunctival sac, taking care to observe both conjunctivae so that unilateral redness is not present before beginning the test. A positive skin reaction is manifested in twenty to thirty minutes by enlargement of the original wheal, with edema and a surrounding area of erythema. The presence of a positive skin test alone is not a contraindication to serum. It does, however, mean that care must be taken in giving the therapy and, if the ocular test also be positive, the patient should be desensitized.

Concerning the dosage of serum, it is well to state in the beginning that the exact amount necessary for successful therapy in every case is not known. This raises the question of how antipneumococcus sera brings about a premature crisis. It is known that the blood of all patients who recover from lobar pneumonia contains a definite measurable amount of protective antibodies, and recovery from the disease starts simultaneously with the appearance in the blood of these protective substances. Therefore, it is probable that the crisis of pneumonia occurs when a sufficient amount of these antibodies is either formed or injected into the body so that the bacterial products or "toxins" are neutralized. It thus necessarily follows that the sicker patients with the most toxemia and infection will require more serum than the moderately ill ones.

Following a negative test for sensitivity, 40,000 to 50,000 units should be given to moderately ill patients who have been sick no more than seventy-two hours, but, when their illness has lasted longer, this dose should be doubled. In very toxic and severely ill patients, one should give 80,000 to 100,000 units, and type two cases will be found to require more antiserum than type one. This amount of serum should be given intravenously within twenty-four hours, and the doses spaced as follows:

First dose, 5,000 units, or one-half of the smaller syringe dispensed by the commercial houses. This should be warmed and given very slowly with a solution of epinephrin handy.

Second dose, one hour later, 10,000 units, and the rest of the serum left from the first syringe, making a total of 15,000 units.

Third dose, varying from two to four hours later, 20,000 units.

Fourth dose, four hours later, 10,000 units, if the patient is improved clinically, or 20,000 if unimproved.

Following this, the general condition of the patient should be the guide to further therapy, as the clinical course and temperature are the best practical aids in determining when sufficient serum has been given.

From a review of the literature and experience with several hundred cases of pneumonia, the following conclusions are obvious:

1. Types I and II antipneumococcic sera are of proven value in the therapy of lobar pneumonia due to these two types of pneumococci.

2. The early diagnosis of this disease depends

more on alertness, than skill of the physician, and the therapeutic results are enhanced by early treatment.

The majority of acute lobar pneumonias in the young and middle-aged are due to types I and II pneumococci.

4. Typing methods are comparatively simple and easily carried out in a laboratory equipped for ordinary clinical work.

5. The intravenous administration of the specific antiserum is fairly easy, a commonplace medical procedure, and, with the concentrated products now available, reactions are few and of small moment when due precaution is used.

6. The cost of the serum, which has been considered prohibitive, is now reasonable, and, as this therapeutic measure is appreciated more, the increased volume of its production will further lower this cost.

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EPILEPSY AND ARTERIO-SCLEROSIS.*

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In spite of the unusual amount of work done on the subject of epilepsy, we are far from a close approach with regard to the etiology and the nature of the diseased process. Efforts are being made in that direction from chemical, physiological and anatomical angles, without well-defined results. A psychological approach initiated with and based upon the accumulating knowledge in the field of the Freudian principles concerning compensatory manifestations in the place of emotional disturbances, has introduced a new conception of epileptic seizures, which is rich in valuable suggestions and possibilities. Nevertheless, the latter does not cover so far the entire field of epilepsy in all its phases and variations. Thus, the so-called organic as well as the psycho-pathological views have not answered all the questions concerning that mysterious and baffling morbid phenomenon called epilepsy. In a previous study some suggestive ideas were found in an endocrinic relationship of epilepsy at least in women in their period of maturity and involution, and beneficial therapeutic results have been obtained (*American Journal of Psychiatry*, March, 1933; p. 929).

*Read at the December meeting of the Philadelphia Psychiatric Society.

On the following pages another attempt is being made to envisage epileptic phenomena as manifestations of a progressive material damage to the motor cortex produced by progressive sclerotic changes in the cerebral blood vessels. It is to be emphasized that at no time in previous as well as in the present studies of the subject, the writer considered the data observed as exclusive etiological factors in the affection under discussion. However intricate the pathogenic content of epilepsy may be, its organicity in some cases cannot be ignored. One of these instances is found in advanced arterio-sclerosis. Within the last ten years quite a large number of arterio-sclerotic brains were examined by the writer and the life histories of some of those victims contained descriptions of typical epileptic seizures which made their first appearance at an advanced age. In twelve individuals out of a series of seventy-five who died from various visceral causes, death occurred suddenly or rapidly after apoplectic insult. Besides hemorrhagic or thrombotic foci which could explain immediate cause of death, there was found a multiplicity of yellowish spots over the cortex with predominance over the motor areas, some minute adhesive areas as evidenced from attempts to peal off the pia-arachnoid membrane. Small fragments from some of these pathological areas were examined histologically and cellular changes with regard to the shape, size, and to the nucleus were distinctly present. Infiltration of the walls of the blood vessels, peri- and end-arteritis, was found not only in the cortical but also in the underlying white substance. Similar alterations were found in the pia overlying those small cortical areas: the membrane over those spots was thick and adherent. Although these gross and microscopical lesions were present in a diffused manner, from one pole of the cerebrum to the other, the predominant number of foci of involvement were seen over both motor areas. The twelve patients, therefore, who during life developed generalized epileptic seizures at an advanced age presented cerebral arterio-sclerosis and pathogically areas of meningo-encephalitis particularly distributed over the motor areas.

In analyzing the clinical histories of the twelve cases, one finds the usual manifestations of arterio-sclerosis, namely, hypertension, headache, and particularly vertiginous attacks. As to the convulsive seizures themselves, nothing was wanting in the picture observed in epilepsies of any other origin. Sudden onset with unconsciousness, violent muscular contractions on one or both sides, followed by sleep, were all present here. Everyone of these patients presented transient attacks of mono- or hemiparesis with apparent complete recovery from each, but, when the epileptic seizures supervened, the paretic attacks ceased to appear. The ages at which the convulsive seizures made their first appearance were from fifty-seven to sixty-eight. They would occur only occasionally and five of the entire series expired in one of these attacks.

In our attempt to correlate the anatomo-pathological findings with the attacks of epileptic seizures we must admit that the isolated epileptic crises are due either to temporary circulatory disorders in the form of ischemia, produced by arterial spasm, so common in arterio-sclerosis, or to a sudden inflammatory flare-up in the small areas of chronic meningo-encephalitis which we found to be so abundantly distributed in the brains of the entire series of twelve cases. The inflammatory incidents can be easily conceived if we recall the experimental work of Schaeffer, who demonstrated cerebral embolism with paraffin. He noticed around the islets of softening thus produced the ordinary signs of inflammation, namely, an afflux of small young cells (Schaeffer, Etude expérimentale et anatomopathologique du Ramollissement cérébral, Thèse de Paris, 1910-1911). In the presence of such pathological findings it seems logical to view epileptic convulsions in arterio-sclerotic individuals from an organic standpoint. The pathological lesions observed in my cases, were, it is to be noted, of a disseminated distribution. They were found over the occipital, frontal and temporal lobes as well as ever the motor area. In a contribution entitled "Organic Epilepsy Considered from the Standpoint of Cerebral Localizations" (*J. Nerv. and Ment. Dis.*, v. 61; 1925; p. 142), and in another contribution entitled "The Pathologic Aspect of Some Epilepsies," a great variety of cerebral lesions, gross and miscroscopical, was presented by the writer. There were cases of tumors of the pituitary, hemorrhage in the occipital lobe, neoplasm of ponto-cerebellar angle, glioma of the angular gyrus and of the temporal convolution, dilatation of the lateral ventricles, ependymitis of the anterior cornu of the lateral ventricles, and fi-

nally a pathological state of the choroid plexus. The conclusion to which all those cases lead is that a lesion of any portion of the brain may be accompanied by epileptic seizures and therefore may be considered as an epileptogenous zone. Irritation, inflammation or a damage of any portion of the intracranial contents, whether it is over the vertex of the cerebrum or cerebellum, at their base or in their interior, are apt to produce convulsive seizures with the same characteristic features as in the cases with a distinct lesion in the cortical motor area. Of course transmission of irritation to the motor cortex is a *sine qua non* in epilepsy, and this transmission is done through the association fibers, commissural and projective tracts which connect the motor cortex with various regions of the brain. It suffices to mention among many others the observations of Gowers, Prus, and Minkowski, to understand that the cortical motor area, by means of corticofugal tracts (cortico-spinal, cortico-mesencephalic, and others), contains a specific element for normal or abnormal movements and that the irritation had been transmitted to it through the complex tracts of corticopetal pathways. The first author observed a case in which epileptic convulsions disappeared on one side after an attack of hemiplegia. The second author suppressed convulsions by painting the motor cortex with cocain. The third writer (Schweizer, *Archiv. f. Neurologie u. Psychiatrie,* 1917, 1; p. 389) observed gross disturbances of motion after an experimental ablation of the cortical motor area. In view of all these data and in the presence of the diffuse parenchymatous lesions of the cells, of cellular infiltrations around the ending of the pia at the same levels, in view, therefore, of all the small islets of meningoencephalitis, one is more fortified in the assumption of the miliary sclerotic influence of the cerebral vascular supply on the development of epileptic seizures. However, a more critical analysis of the histories of individuals with generalized arteriosclerosis forces one to admit that cerebral arteriosclerosis, in which pronounced mental disturbances are present and are due to this arterial disorder, may not lead to epilepsy. There are arterio-sclerotic cases in which large areas of softening are observed and which during life presented gross symptoms of cerebral damage, such as hemiplegia, aphasia, etc., and still they were not affected with epilepsy. On the other hand, in the twelve cases mentioned four presented the same macro- and microscopical picture without epileptic manifestations during life. While one cannot escape from giving weighty consideration to the pathological findings in the brain which were apparently due to the sclerotic changes in the cerebral blood vessels, nevertheless one must admit that there must have been still another causative element in the epileptic manifestations. Is it a morbid predisposition or heredity? Out of the twelve patients seven presented histories either of alcoholism, saturnism, broncho-pneumonia and influenza of long standing. The latter two affections existed two and three months, respectively, before the onset of epilepsy. In the remaining five, I succeeded in tracing some members of the same generation, suffering from psychoses. Only one of the five brothers had epilepsy, and he died at a young age, and in another epilepsy was traced to the grandfather on the mother's side. None of the twelve patients gave a history of a severe trauma. The blood Wassermann and the spinal fluid were negative to lues. As to infections and intoxications, it is well known that they, *per se,* may produce cortical changes and consequently become the direct cause of convulsive seizures. As to the hereditary predisposition, the consensus of opinion is in favor of such an influence. Epilepsy and psychoses in relatives are not infrequently found in the medical antecedents of epileptic patients. Heredity in all such cases created presumably a functional exaggeration of the dynamism of the nervous system which, in presence of some organic lesions, will be transformed into epilepsy. Hereditary predisposition usually becomes manifest in infancy or in adolescence. Predisposition may remain latent for many years until some break in cerebral equilibrium takes place, such as acute or chronic intoxication (alcoholism, saturnism, or paludism), syphilitic infection, or, finally, when some organic disease of the brain (tumor, etc.) supervenes. All these factors create a profound disorganization of the cerebral equilibrium. The latter leads to a progressive development of mental deterioration, or, as in our cases, to epileptic seizures. Summing up the entire situation, we find that in addition to evident organic elements, as proven by histological studies, there are other factors which played a certain rôle in the epilepsy of our twelve patients.

The additional circumstances complicate, therefore, the pathogenetic problem of epilepsy. Whatever part these circumstances had in provoking the attacks of epilepsy, the unalterable fact remains that minute anatomic and histologic lesions were found widely distributed over the cortex, which were intimately associated with sclerotic alterations of the blood vessels in an advanced age. One cannot escape from the position of an organic substratum of epilepsy in cases of cerebral arterio-sclerosis. One is reminded of the postulate of Lásègue enunciated many years ago, namely: "Epilepsy which makes its first appearance after the age of eighteen, should be considered as due to a lesion in the encephalon (*Arch. gèn. de Médecine,* 1877)."

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ANEMIA—AN APPRECIATION.*

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There will be no effort made to discuss the classifications of anemias. To me each case of anemia represents a human being who, for some reason or other, has not as much as he should have of one or all of the blood elements. Therefore, all anemias are secondary to the cause of the anemia in the same sense that the temperature, the rose spots, and the enlarged spleen in typhoid fever are secondary to the successful invasion of the body by the typhoid bacilli. When the cause of each anemia has been discovered, we can build a foundation on which to base the management of each case. In the meantime, the present classifications with their varied ramifications are indispensable in our handling of these cases.

Anemia, diversified as are its clinical manifestations, varying its role from cause to effect, and at times playing a mixed role, has, therefore, multitudinous relations to the patient. The presence of an anemia may be first hinted at or revealed during the course of a successful history. A physician may use splendid mechanical diagnostic devices and show great skill in a physical examination, but adequate, skilled history-taking is and will remain indispensable to the handling of these cases. Never is skill more tried than when two human beings, the doctor with his desire to help and the patient with his desire to be helped, sit facing each other to discuss the deviations from normal of the most valuable thing in life, health. They are two separate individuals probably with unlike personalities, different heredities, environments, and opportunities. Yet the physician makes every effort to put himself in the patient's place, feeling as he feels, adopting his outlook on life, seeing the objects as they appear to him, separating the chaff from the grain, and doing all this within time limits that are practical. Glorious as are the endeavors in the many branches of the art and science of medicine, this taking of the history equals in importance many of them. Sheepishly I have looked back, and maybe you have, and realized the missed diagnosis or the irrational treatment due to the poor, the misunderstood, or the misinterpreted history.

Let me illustrate with a few cases in which the histories were important.

The first case: a white farmer of 67, seen in March, 1933, complaining of shortness of breath on exercise and excitement, severe to the extent that he had been unable to work for two years or to supervise work for several months. In taking his G. I. history the information was obtained by direct, detailed questioning that for thirty to forty years he had had bleeding from the bowels and that for fifteen years he had noticed dropping of bright blood on many of his stools. With the physical and laboratory findings that were added to this, a diagnosis of secondary anemia and hemorrhoids was made; the patient's† Hb. by the Sahli method, which is used throughout this paper, was 38 per cent, the red cell count 3,212,000, and color index 0.59. He was placed on local care of the hemorrhoids

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†The hospital cases were in the Northampton-Accomac Memorial Hospital, the laboratory work being in charge of Mr. A. A. Shanks.

and medical care of the anemia. One month later, the patient was symptomatically improved, the Hb. being 60 per cent, the red cell count 4,284,000, color index 0.71. A local hemorrhoidectomy was done by Dr. Denoon. The patient's improvement has been uneventful and he is now doing his usual amount of work. The Hb. and R. B. C. were normal the last time he was examined. This patient never once voluntarily mentioned or considered his bleeding, and was hard to convince that it could have any connection with his disability.

The second case: a white, single female, was seen in March, 1931, with pain in the right hip and knee of two months' duration. The detailed history revealed no significant findings. The laboratory work showed a Hb. of 24 per cent, R.B.C. 1,688,000, color index 0.75. The physical examination disclosed a fixed, firm, non-painful mass the size of an orange in the left breast; the nipple was retracted and large; firm glands were found in the left axilla and left supraclavicular spaces. These findings were confirmed by Dr. W. C. Henderson in consultation. The diagnosis of carcinoma and secondary anemia was made. This history did not reveal the fact that the patient had had two sisters to die of cancer of the breast. Later the patient stated that she had known of the mass for some time but gave no definite date of discovery and stated at the same time that surgical treatment would not be considered by her. The patient died six weeks later.

The third case: a colored, a single female of 19, seen in consultation with Dr. H. L. Denoon on April 28, 1934. The diagnosis of anemia, pyelitis, and pelvic inflammation had been made with pregnancy suspected. The patient absolutely denied to us and to the family this possibility. Treatment was carried on to improve the condition of her blood (details of which will be discussed later) and the pyelitis and pelvic inflammation were treated. After several weeks of study the diagnosis of pregnancy became undeniable and, with the patient's condition desperate, an attempt was made to induce labor; but the patient died a few hours later without labor beginning. I feel that this patient's holding back the causative factor in this history played a definite part in the loss of her life.

The physical examination holds the same two-fold attraction for the physician as does the history—both the chance of finding the anemia and also the cause in certain cases. For these reasons, the examination must be searching and the physical findings carefully and skilfully interpreted.

Paleness must be differentiated from anemia. The light which one has available at the time of the examination must be considered. One must have sufficient light and exposure of the field examined to see clearly. Important findings may be a slight perforation of a nasal septum, diseased tonsils, teeth that justify dental consultation, edema, the pulse, the weight. Seeing what the patient expectorates or defecates is of more value than hearing him tell about it. Proper laboratory work further enhances the diagnostic value. The wavy heart impulse; the wide pulse pressure; the glandular enlargement or changes in consistency; the mass in the abdomen, be it fecal matter, cancer of the stomach, distended bladder, or pregnancy; local tenderness at any point; seeing the penis,—all are important. The prostate must be felt, the cervix seen, the bimanual done, the rectum carefully examined, and the reflexes checked. These are some of the items in skimming briefly the surface of the important portion of the work-up,—a careful physical examination, intelligently interpreted.

Now let us look up the third converging pathway that also may lead towards the disclosure of an anemia and at times of the cause as well—the laboratory work. To us who daily come in contact with the sick, I fear that at times laboratory work takes on a time-consuming, costly, almost mystic role which hides its true value. Through the organization of society which we have set up to live under and support, our government, there are available certain laboratory facilities paid for by the people through the maintenance of that government. By this means certain causative factors of anemia may be investigated. The stools may be sent for ova examination and cultures, the blood for agglutination tests and Kahn reactions, as the need is felt indicated by the physician.

The following portion is not addressed to the physician whose practice justifies a technician or who is located with a group large enough to have at their disposal satisfactory laboratory facilities furnished by a qualified technician. The following is what I consider the irreducible minimum of laboratory equipment which each physician should have in the handling of "every day," work-a-day world

anemias: a Sahli hemoglobinometer or other type if preferred, a microscope, a counting chamber, diluting fluids, slides, Wright's stain, and a very few feet of space set aside for a laboratory. He also needs that equipment necessary to do a urinalysis. Later, as interest increases, may be added gastric analysis equipment and occult blood tests. The cost of these is not prohibitive and the use of them can be learned or recalled with the aid of a textbook on laboratory technique. The time used is just as valuable as that taken to do the physical. We find now that we have available a very helpful agent in the color index which portrays mathematically the proportion of the Hb. and the red cells to each other. Add to these an adequate study of the stained smear and a satisfactory amount of laboratory work is available.

Take these three, the history, the physical, and the laboratory work, and, fourth, enough time to evaluate and consider what they present. The anemia can be determined, its type established, and, often, its cause ascertained. Then and not until then can we turn our attention to treatment.

In discussing treatment, pernicious anemia will be considered first. It is my hope that pernicious anemia will soon be clearly recognized as a secondary anemia. That is to say that the cause of pernicious anemia will be as definitely known as is that of the anemia which occurs as the result of prolonged bleeding from hemorrhoids which is already accepted as secondary. A definite step has been taken by Strauss and Castle[1] who postulated that pernicious anemia is due to a specific reaction between an extrinsic dietary factor and an intrinsic factor present in normal gastric juice. From this or other theories now postulated or yet to be brought forward, definite knowledge of the cause of pernicious anemia will probably be evolved which may be the basis of an entirely new treatment. But for the present, Murphy[2] offers the most rational answer to the question of how to treat pernicious anemia. To quote: ". . . for the patient who has no difficulty in consuming adequate amounts of whole liver either raw or cooked, one need hardly encourage the use of any substitute for it. There are, however, patients who find difficulty in doing this. Fortunately for such individuals there are now substitutes for liver which may be used with entire satisfaction. These substitutes are available for peroral or parenteral use. Of course the treatment of each case is individual and must be selected and changed as indicated; and must also contain such accessory treatment as that individual case requires."

The following two cases of pernicious anemia are presented to illustrate the points stressed.

The first case: referred by the late Dr. S. S. Kellam, a female of 57 years, seen in September, 1931. She had been ill with a "cold" for a week. Her only complaint when seen was fatigue. The history brought out the fact that in 1911 when a physical examination was made it was discovered that she had achylia and was placed on dilute hydrochloric acid. She also stated that her extremities felt as though the circulation was cut off and that they were asleep. The examination revealed a yellowish tint to the skin wtih the sclera bluish white in color. Mucous membranes did not appear unusually pale. The laboratory report showed a Hb. of 60 per cent; R.B.C. 2,850,000; and color index 1.07; smears study showed marked anisocytosis; W.B.C. 2,800; P. 55; L. 45. The patient, because of a dislike for liver, was placed on Lilly's liver extract No. 343, dilute hydrochloric acid, and a general diet. She was placed in the hospital for one month. On discharge she was symptom free except for paraesthesia of the extremities. The skin and sclera were average. The laboratory report showed a Hb. of 92 per cent, R.B.C. 4,492,000, and color index 1.04. She has been following her usual occupation and has remained under medical supervision and continued on maintenance doses of substance containing the active principles of liver. When last seen she was taking extralin.

The second case: referred by Dr. James Doughty, a white woman of 65, seen in June of 1929. The patient gave a history of chronic illness which had gradually gotten worse for the past three years; the complaints being biliousness, uneasiness in the chest, nausea, stiffness of the ankles, and from time to time had been jaundiced. The physical examination showed a faint yellow tint to the skin. The mucous membranes were pale. A marked systolic murmur was found at the apex transmitted into the axilla. There was moderate edema of the legs. The laboratory work was as follows: Hb. 27 per cent; R.B.C. 1,072,000; color index 1.35; the smear showed marked anisocytosis and poikilocytosis; W.B.C. 2,800; P. 65 per cent; L. 35 per cent; gastric

analysis showed no free hydrochloric acid. The patient was placed on a half pound of liver daily, liver meal in milk three times a day, dilute hydrochloric acid, and general diet. She remained in the hospital two weeks and improved greatly symptomatically except for the paraesthesias of the legs. The systolic murmur lessened markedly in intensity. The edema of the legs disappeared. The laboratory report showed Hb. 55 per cent; R.B.C. 2,184,000; color index 1.3; smear study not recorded; W.B.C. 8,200; P. 76; L. 24. The patient made a complete, uneventful recovery at home except for the paraesthesias. Because of the monotony of medication she has been on liver, liver meal, and ventriculin. The achylia treatment was changed to include elixir lactated pepsin and for periods she has been given gastron. When last seen her blood picture remained normal. She is doing her own housework but still complains of the paraesthesias of the legs.

The intravenous and intramuscular administration of liver in cases of pernicious anemia has occupied increasing space in medical literature during the last several years. I have not had an occasion to use these forms. As to the efficacy of these forms of treatment I shall quote from an abstract of an article by Kniskern and Christian:[3] "During the past year investigators have shown that liver extract is much more potent, gram for gram, when injected intravenously or intramuscularly than when given by mouth in pernicious anemia. The injection treatment should replace transfusions unless the patient is in extremis. It is particularly valuable in cases with pathological or functional disorders of the gastro-intestinal tract which render uncertain the absorption of oral substances. It is cheaper and more pleasant to take than treatment by mouth. Liver extract has been found to be thirty to fifty times more potent when injected than when given by mouth. . . . The intravenous or intramuscular method of administration is equally effective. American products are not sufficiently purified to permit the administration of adequate dosage intravenously without reaction, unless frequent small injections are given. The English product is more highly purified. The new concentrated product of Lederle may be given intramuscularly with very little local reaction."

In the secondary or hypochromic anemias, accessory treatment is valuable in preparing the patient for the removal of the cause of the anemia and in hastening and facilitating the convalescent period; also in those cases where the cause cannot be discovered, or where one or more of the accessory factors is the cause. The well known and discussed accessory agents which I have employed are: iron, ventriculin, liver extracts, and various preparations containing one or more of the above in combination with other ingredients; general diet in keeping with the basic condition of the patient and containing all the food elements; adequate rest, relaxation, fresh air, and sunshine; supervised exercise; transfusions; care of constipation if present—each as applicable to the individual case.

A quotation from Dr. Warfield[4] when writing on another subject is also applicable here: "No experimentation is more difficult than that in the clinic on human subjects. Control cases exactly similar to those treated in any special manner are not possible to secure. By the omission of the special treatment in alternating cases approximate control series can be obtained, but such alternate cases are not true controls. Further, the human being is so constructed that one gets well in spite of what is done, another dies in spite of what is done. Yet there should be principles of proper treatment and it is to these principles that we now turn."

In searching for these principles, allow me to quote from the eminent authority on anemias, Dr. Murphy:[2] "Rational treatment can hardly include combinations of liver extract, ventriculin, copper, vitamins, etc., together with iron, as there is not yet evidence to indicate that such combinations are more effective in the anemia of man than the iron contained therein, and they are less palatable and invariably many times more expensive." He further states: "For hastening the improvement of the blood, and especially the patient's general physical condition, an intramuscular injection of 3 c.c. (prepared from 100 gm. of liver) of concentrated liver extract (Lederle) at intervals of five to seven days, with peroral use of iron is to be advised."

To quote from Vaughan's[5] recent book on the use of copper: "Mills (1931) and Adamson and Smith (1931) believe that in some cases iron is only effective if copper is added in the proportion of 1/48 of a grain of copper carbonate to 30 grains of Blaud's mass, and that such an addition always improves the effectiveness of iron." The author

continues: "Copper is worthy of trial in any case that does not respond to iron, but such cases appear to be rare." In regard to the giving of hydrochloric acid, Vaughan states: "Since Mettier and Minot (1931) showed that iron was more readily absorbed from an acid than an alkaline medium, the administration of hydrochloric acid might on theoretical grounds be considered helpful. Though it may improve digestion there is no real evidence available to suggest that it is necessary." In my limited experience I have found that chronic secondary anemias respond well if, in addition to adequate doses of iron, ventriculin is given as the P. A. factor containing drug, at least to start with. This, I believe, is in agreement with Minot's using liver extract intramuscularly to obtain the P. A. factor.

Iron, time tried and proven valuable, is a weapon on which we can place dependence. The form, the dose, and how it acts, are, have been, and probably will be for some time a subject for investigation. Why it takes the large doses which it does take to produce maximum results with the iron content of the body estimated at 38 grs., I do not know. Whether the iron is absorbed directly, whether it sets free food iron to be absorbed by forming sulphides with the iron given, or whether it stimulates the mucous membranes to absorb iron, I am not in a position to say. But I do know that iron in large doses is of distinct value. From the introduction of Blaud's pills a little over a hundred years ago, the dose has varied from generation to generation as has the dose of other forms of iron. Personally I find Blaud's from 60 to 90 grs. per twenty-four hours, or iron and ammonium citrate grs. 45 to 60 per twenty-four hours adequate.

The following cases are quoted, not with any hope of covering the entire field of secondary or hypochromic anemia, but to further practically stress the points which have been emphasized.

The first case: seen in consultation with Dr. H. L. Dencon; a white female of 26, an obstetrical case which had been delivered two weeks before of a normal baby. The history showed that the patient had pyelitis during pregnancy which had necessitated bed rest and medication. A week after the delivery she began a septic temperature. The catheterized specimen of urine was loaded with pus. The physical findings showed a patient acutely ill and pale looking, with mucous membranes moderately pale and kidney angles slightly tender. The laboratory work, done the day before the consultation, showed Hb. 56 per cent; R.B.C. 3,824,000; color index 0.7. This decrease in Hb. and R.B.C. had occurred since the return of the pyelitis. The treatment for the pyelitis was continued and, as the nausea decreased, the patient was placed on lextron capsules, one after meals and at bedtime. The reason for this choice of medication was that for two days prior to the consultation she had been tried on iron and ammonium citrate in a liquid prescription and liquid Blaud's, respectively, both of which were too distasteful to take. Liquid medication had always been unpalatable. She felt that capsules would be preferable to pills. The small dose of lextron was given because the patient felt that more than one capsule would nauseate her. The temperature became normal in a week and she was discharged in two weeks. Urine continued to contain pus. The Hb. a week after the consultation was 65 per cent; R.B.C. 3,852,000; color index 0.85. The patient was sent home with a prescription for Blaud's pills, gr. 15 to be taken after meals. When seen six weeks later, Dr. Denoon reported the urine negative and no sign or symptoms of anemia. To me the fighting wedge against her anemia was pyelitis. I believe that, while it might have been unwise, iron medication could probably have been dispensed with. At least we may say it was an accessory to the main line of attack.

Second case: a white married female of 21 who came for a general examination. When beginning a series of treatments for acne it was discovered that the patient was anemic and complained of an unusually tired feeling. This led her physician to request the examination. This history taken in April, 1934, gave her complaints other than the acne as being tired, sleepy, constipated, overworked, and an absence of menstruation for ten weeks. Examination showed moderately pale mucous membranes and the presumptive signs of pregnancy. The laboratory work gave a Hb. of 74 per cent; R.B.C. 4,000,000; color index 0.9; smear study normal. She was placed under the care of an obstetrician; acne treatments were continued; adjustments in living were made so that work fitted in with her condition; constipation was treated; and the patient was placed on lextron capsules, three after meals, for one month. At the end of that time her symptoms

had markedly improved; her Hb. was 80 per cent; R.B.C. 3,500,000; color index 1.1; smear study at this time showed mild ring formation. Medication was changed for the next month to Blaud's pills, four after each meal. At the end of the period the patient remained symptom free; her Hb. was 90 per cent; R.B.C. 4,000,000; color index 1.1. Blaud's pills were discontinued. In this case I believe the treatment of the anemia, while not spectacular, may have stayed the development of a serious anemia; and increased the oxygen-carrying power of the blood at an opportune time.

In regard to the care of obstetrical cases from an anemia standpoint, I will read from an abstract of an article by Davis and Walker:[6] "This subject does not receive the attention that it deserves, in spite of the fact that a patient with anemia is definitely less fit to undergo the strain of labor. Relatively few women go through pregnancy in the care of a physician who routinely makes blood counts and hemoglobin determinations.

"Anemia in pregnancy is either typically secondary or of a type resembling pernicious anemia. None of the latter type were seen in this study. A patient was classed as anemic when the blood findings were below the lowest limits of normal: hemoglobin 75 per cent and red cell count 3,500,000. In a group of 161 cases examined, 43 per cent showed an anemia; if border-line cases are included, the percentage of anemia rises to 56 per cent. These cases were examined in the summer and early fall and were used for the untreated group. The treated group was selected in February and March and was chosen from a group of 133 patients of whom 90 per cent had anemia.

"The percentage of primiparae and multiparae in both groups was practically identical, but in the untreated group there were twice as many with elevated blood pressure, most of them being of the pre-eclamptic type, and there were almost five times as may premature deliveries. There thus was an increased fetal mortality in the untreated group. Temperatures of 100.4 or over for twenty-four hours were recorded in 27.9 per cent of the untreated group, and 11.2 per cent of the treated group.

"The average length of labor in the primiparae was 22.8 hours in the untreated group, 15.6 hours in the treated group; in the multiparae, 13.4 and 11.1 hours, respectively."

The third case: the credit for which goes largely to Dr. W. J. Sturgis, Jr., then a student interne in the Northampton-Accomac Memorial Hospital, was seen in June, 1933, by the surgical service with a severe secondary anemia following an incomplete, self-induced abortion. The patient was a white, married female, 28 years old, who had been passing clots for approximately one month. Chief complaints were pain in head and eyes, and shortness of breath. Examination revealed paleness of skin and mucous membranes, weakness, and uterine bleeding. Laboratory work showed a Hb. of 30 per cent; R.B.C. 1,136,000; color index 1.36. A D. and C. was done the morning following admission by Drs. Denoon and Henderson. The next day she was placed on Blaud's pills, gr. 10 every two hours from 6 A.M. to 10 P.M., making the dose 90 grains daily. Added to this ½ mgm. of copper sulphate was given three times a day. Because of the difficulty in obtaining a donor, a small transfusion of citrated blood could not be given until the fourth day after admission. Two days following the transfusion the Hb. was 38 per cent, the R.B.C. 2,352,000 and the color index 0.82. She was continued throughout her hospital period of twenty days on medication as stated and a general diet. Eight days after the transfusion the Hb. was 55 per cent, the R.B.C. 3,232,000, and the color index 0.99. Fifteen days from the transfusion the Hb. was 68 per cent, the R.B.C. 3,464,000, and the color index 1.0, at which time the patient was discharged. This case represents one of the many where the cause of the anemia is discovered and corrected, and with the transfusion and the administration of adequate doses of iron makes an uneventful recovery.

Contrast with with the case mentioned in the first of the paper, the colored female of 19, with pyelitis, pregnancy, pelvic inflammation, and secondary anemia. On her admission her Hb. was 47 per cent, R.B.C. 2,624,000, and color index 0.9. For the six days of hospitalization before being seen in consultation, she had been on 20 grs. of Blaud's pills after each meal, 60 grs. a day. To this treatment was added 3 c.c. of liver extract (Lederle) intramuscularly once weekly. The attack against the infection in the G. U. tract continued. Seventeen days following her admission her Hb. was 33 per cent, R.B.C. 2,016,000 and color index 0.8. At this time a transfusion of 250 c.c. of citrated

blood was given. One had not been given sooner, nor were more given because of the difficulty in obtaining donors. The day following the transfusion the Hb. was 34 per cent, R.B.C. 1,856,000, and color index 0.94. The extract given intramuscularly and Blaud's pills were continued throughout the treatment. The urine remained loaded with pus and the patient died as stated on her twenty-fifth day of hospitalization. The determining factor, I believe, in this case is that we were unable to control or eradicate the underlying cause of the condition which was the pregnancy.

It would not be fair even in this scanty appreciation of anemia not to mention the hypochromic or secondary anemias of infants. To quote from Vaughan:[5] "The onset is gradual. It is more common in premature infants and those small at birth. Inquiry into the early history is important. Susceptibility to infection is a marked feature. A history of recurrent or chronic colds, diarrhea, enteritis, etc., is suspicious. Mackay (1931) found that anemic infants had a morbidity rate twice as great as those given prophylactic treatment."

The next two cases will be quoted briefly and their review confined to the treatment of the anemia.

The first: a white female, 70 years old, suffering with rheumatoid arthritis. On October 8, 1934, her Hb. was 55 per cent; R.B.C. 2,480,000; color index 1.14; smear study showed marked anisocytosis and occasional poikilocytosis. Her medication consisted of 30 gms. of ventriculin and 30 grs. of Blaud's pills daily with a well-balanced diet. The choice of this combined medication was based on the chronic type of anemia, the color index and the smear study. On October 16, 1934, one week later, her Hb. was 72 per cent; R.B.C. 3,364,000; smear study showed occasional poikilocytosis only; color index 1.1. Ventriculin was at this time discontinued and the iron medication continued. On November 2, 1934, twenty-five days from starting the treatment, her Hb. was 92 per cent; R.B.C. 4,272,000; smear study showed slight anisocytosis; color index 1.1.

The second case: a white female, 42 years old; referred by Dr. Critcher and seen in consultation with Drs. Denoon and Henderson. Patient had uterine bleeding due to a fibroid uterus. On November 14, 1934, her Hb. was 40 per cent; R.B.C. 2,292,000; smear study showed marked poikilocytosis and anisocytosis; reticulocytes were absent; color index 0.9. She was placed on ventriculin 30 gms. and Blaud's pills, 40 grains a day. Bleeding was controlled by medical treatment. On December 7, 1934, twenty-three days later, her Hb. was 58 per cent; R.B.C. 3,824,000; moderate poikilocytosis; slight anisocytosis; reticulocytes numerous,—showing the producing power which the bone marrow had gained. The patient was sent home for one month and was continued on treatment; being given ventriculin with iron, 20 gms. daily. On returning to the hospital thirty-one days later or fifty-four days from the beginning of treatment, her Hb. was 91 per cent; R.B.C. 4,880,000; smear study showed slight anisocytosis; color index 0.95. Patient was at this time operated on by Drs. Denoon and Henderson and had an uneventful post-operative period.

It has been my aim in this paper to stress the importance of finding the cause of an anemia, showing how the history, the physical examination, and the laboratory work help toward determining this factor. The treatment indicated is the eradication of the cause where possible, liver or its equivalent in pernicious anemia, and iron in the so-called secondary type; liver or ventriculin are added in certain cases when indicated, with well-balanced diet in both, and other treatment as the individual anemia indicates. I hope I have brought out the double capacity of an anemia, enabling it to be cause, or effect, or a combination of both, playing behind the disabled patient, a paradox within itself.

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A PLEA FOR BIRTH CONTROL

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The problem of Birth Control, linked as it is with the population problem, is one of the most interesting of the modern age. Academically, at least, it has been a moot point ever since an obscure English clergyman, the Reverend T. R. Malthus, published his essay on "The Principles of Population" in the year 1798. It was his theory that "the chief cause of human strife and misery lies in the constant tendency of mankind to increase beyond the means of subsistence."

It is generally estimated that one-third of all pregnancies are interrupted. It is an anomalous fact that the New York State Department of Health warns women, in a circular which it distributes, that frequent and close pregnancies predispose mothers to tuberculosis; yet that same Department of Health is debarred by law from giving information which would enable a woman to avoid too many pregnancies until after she has developed the disease. It would appear that any sound program of preventive medicine would have to include birth control. We are told by a large number of social reformers that "self-control," not "birth control" is the solution of all evils attendant on marital relationship. It is apparent that "self-control" is hardly a solution for the many women who have no choice but to yield to their husbands if they want to maintain harmony in the family, nor for women who love their husbands too much to deprive them of what they seem to need. It must be remembered that in a number of states refusal of conjugal rights constitutes grounds for divorce. Dr. William Allen Pusey, formerly President of the American Medical Association, stated that sexual life is the elemental fact upon which satisfactory family life, as a rule, depends, and that without satisfactory sexual life, marital life as a rule is irreparably damaged.

In view of the evident need for birth control, our medical profession has been curiously apathetic in its attitude towards the problem. Doctors have not feared the hand of the law so much as they have feared that if they took the initiative in advising their patients as to contraceptive methods they would be labelled as "sex-minded" and classified professionally with the abortionist. That the terms birth control and abortion should still be confused by the laity seems incredible. It is hard to believe that doctors can be cooly indifferent to their patients' welfare; yet there are doubtless many like the one of whom a woman patient wrote, "I have asked my doctor, oh! so many times, to tell me something to do to prevent conception, but he won't tell. It is easy enough for him to say, 'now you take your life in your hands if you have any more children.' "

The American Birth Control League was organized by Mrs. Margaret Sanger, in New York City, in 1917, the first Birth Control Clinic in this country. Birth control is a factor in the preservation of the stability of the nervous system. Recuperation on the mother's part depends on the proper spacing of her children. It seems fairly evident that mentally deficient persons whose social adequacy is precarious should not run the risk of reproduction. Apart from the possibility of the inheriting of their condition, the added burden of rearing children would jeopardize their success in the community. Moreover, as parents, they would be able to provide only a deficient environment, and that handicap should not be visited upon any child whether mentally deficient or not.

Birth control is a conscious adaptation to a changing environment. Paradoxical as it may seem, a few thousand years ago living was simple but life was hard. Both of these made for free and prolific breeding. Life was simple. Man's wants were few. Land was free and food and drink was what nature gave. There was no reason for any man to limit his offspring. Prolific breeding was necessary to preserve the race. As civilization has advanced, life has become harder but living has become easier. The conditions are getting to be exactly reversed. With this reversal of conditions, man must change his habits of breeding.

Spacing children means the planning of each conception and pregnancy with a view to the best time and season, both for mother and child. Even with

a healthy mother and a sound inheritance of bodily and mental endowment on both sides, too frequent and too numerous pregnancies are to be avoided, as undermining to the mother's health and as taking her from the care of her living children. When the mother is not entirely well, and the endowment not of the best, spacing and limitation are the more necessary. Economic considerations enter into nearly all cases, and in families where the mother must work outside the home, the questions of number and interval are most acute. In each pregnancy that may be contemplated, and in all kinds and conditions of society certain factors are involved, such as the age of the mother, and to a lesser degree the age of the father; the mother's general health, present and past; the time since the last delivery or miscarriage; the sort of pregnancy and delivery she has experienced and the total number of children that are deemed desirable and which can be adequately reared. The best period for child bearing appears to be between twenty and thirty-five.

Bitter has been the contest and loud the argument between the opponents and advocates of birth control in America. While they have argued, the United States has ranked twenty-third in the maternal mortality rate among the civilized nations of the world. Such a disgraceful condition calls for the mobilization of all people who are interested in the lives of mothers now needlessly dying in America. Women who face the grim hazard of motherhood have a right to be taught the knowledge which will permit them to choose the time and circumstance of their own childbearing. On religious grounds many believe birth control is sinful. Others deplore it because if three mothers had known and believed in it, there wouldn't have been any Caruso, Carlyle or Napoleon. Common sense suggests there is no reason why a mother should have a baby if she doesn't want it. And no reason for allowing a rich woman, with a competent doctor, to know all about birth control, while making it a crime to inform the poor, for whom extra children mean extra burden and trouble.

The Clinical Research Bureau, of New York, reports that among 10,000 married women, 5,010 had an average of more than two abortions each, before they secured advice in spacing children In Philadelphia one charitable hospital states that of 774 women admitted to the gynecological wards 367 came because of attempted abortion. The White House Conference on Child Health Protection estimates that there are 700,000 abortions each year in the United States, due primarily to economic inability to care for the living children.

The Federal Children's Bureau, in case studies of 7,500 maternal deaths, reported that 1,875 were due to abortion. The New York Academy of Medicine found that abortion caused 350 among 2,000 maternal deaths. In each report 75 per cent of the interrupted pregnancies showed convincing evidence that the abortion was intentional. Nine-tenths of all these women who died left orphaned families.

Birth control can and does prevent the anguish and despair that drives mothers to the dangerous act of abortion; the death of many mothers and the lifelong illness of many more; the loss of a mother's influence to thousands of growing children; a growing burden on our hospitals and the increased responsibility of our social agencies.

The number of criminal abortions is more than double the number of normal births. The fear of unwanted pregnancy does more psychic damage than do all the reactions against preventives. The chief considerations on the part of the man who practices contraception are usually those concerned with the health and happiness of his wife and with his ability to take care of the children. Whatever the reactions of a man to the conditions of abnormal contraceptive practices may be, they are usually not nearly as powerful as the dread of seeing his wife enter into pregnancy which he knows, or feels she cannot endure, or to see his family grow beyond his ability to provide for. Thus the haunting fear that his wife will suffer, or that she will have more children than he can provide for, will do more to upset the health of the average man than can any likely contraceptive practice.

The enslavement of maternity and the fast-swelling stream of the unfit present a compelling motive for remedial work. Unfortunately, maternal and foetal mortality is associated in the mind of the public, and also in the minds of a good many physicians, with the sex taboo—a barrier which effectually restrains in this vitally important field those humanitarian impulses which are operating so spontaneously and gallantly in the fight against plagues and some other agencies of death. There is probably no field more promising for the promotion

of health and human happiness than that concerned with the control of conception. The desirability of controlling conception is being appreciated by physicians in increasing numbers. Many of them, indeed, have realized their responsibility in this matter, not only on account of the widespread use of contraceptive measures of one kind or another among intelligent married people in the United States, but also because of the obvious advantages of placing at the disposal of patients who seriously need contraceptive advice those methods which are safe, simple and satisfactory, thus protecting needy women from quackism, charlatans and commercial exploiters who may provide measures that are both useless and dangerous. The desirability of preventing pregnancy among cardiac, pulmonary, renal, diabetic patients and also toxic goiter patients, is frequently discussed among physicians but too often neglected until mortality and morbidity stalk abroad with its terrible tragedies.

It is indeed absurd for one to say, "I advocate large families" or "I advocate small families," without reference to conditions in individual cases. These arbitrary statements can never meet with the approval of the majority of thinking people. While it may be desirable for some families to be large, it would certainly be a calamity for others.

It is not only our right, it is our duty, or rather one may say the natural impulse of every rational and humane person, to seek that only such children may be born as will be able to go through life with a reasonable prospect that they will not be heavily handicapped by in-born defect or special liability to some incapacitating disease.

To build an ever-increasing number of hospitals, asylums for lunatics, idiots and incurables, reformatories and other havens of refuge; to provide them with every comfort and manage them scientifically, is undoubtedly a very fine thing, and speaks well for the progress and development of human sympathy. But what is forgotten is that, by concerning ourselves almost exclusively with human ruins, the results of our social abuses, we gradually weaken the force of the healthy part of our population.

There is no doubt that public opinion is gradually favoring limitation of families. What all women are longing for is that they shall have only enough children to rear properly and decently. There is no fact better established than that a man can transmit only that which he is. If his system is weakened by excess or tainted with disease, he can beget only physical weakness or beings tainted with disease. The syphilitic, the consumptive, the epileptic, the alcoholic, should not produce his kind merely to be the offerings as wards on human society with its unlimited burdens. Every child has a right to be well-born, and parents who are not able to take care of them after they have come should not bring children into the world. How can one sincerely sanction the imposition of excessive maternity on any woman? Thank God that there are relatively few people of an intelligent society who deliberately allow such maternal imposition. I am convinced that the birth control movement is the most intelligent and scientific charitable and philanthropic enterprise now functioning in the field of altruistic endeavor.

Generally speaking, what is the object of having increased population when the country is not able to care for its present inhabitants and, without definite financial sacrifice, and in the last analysis, what is the advantage of mere numbers?

106 East State Street.

FOREIGN BODY AROUND PENIS—WITH CASE REPORT.*

P. G. Fox, M. D.,
Raleigh, N. C.

The literature contains numerous case reports of foreign bodies around the penis, such as hair, strings, rubber bands, rings, bottles, automobile bearings, etc. These agents tend to produce strangulation of the penis and its results may be disastrous.

The diagnosis in these cases is self-evident, but it is the removal of these bands that may prove to be baffling and tax the ingenuity of the physician.

It is necessary to remove the cause as soon as possible and with as little trauma, for one must remem-

*Read before the Seaboard Medical Society, at Kinston, N. C., December 5, 1934.

ber that a great deal of trauma has already been produced by the foreign agent.

The following case is presented because of the type of the foreign body and the method of its removal.

R. S.—History No. 1815, age 11. Admitted to the hospital about twelve midnight complaining of pain in penis, and inability to void. Past history essentially negative. About twelve hours before admission to the hospital, he placed a bolt nut over his penis as far as the scrotum. He immediately tried to remove it but was unable to do so. The greater part of the afternoon was spent, without success, in trying to remove the nut.

Swelling began to appear about 5 P. M., and he also became aware that he could not void. The patient kept his condition to himself until about 11 P. M. when the pain became so severe that he had to confide in his father, who immediately brought him to the hospital.

Examination revealed the bladder to be distended three finger breadth above the symphysis pubis. The penis was surrounded at the peno-scrotal junction by a bolt nut, hexagonal in shape. The penis was considerably swollen and edematous, the swelling coming up above the nut. The patient was given a hypodermic of morphine sulphate gr. 1/6 and an attempt made to catheterize him. This was very difficult but was finally accomplished by filling the urethra with mineral oil and passing a number eight ureteral catheter. The catheter was left in place for drainage.

Showing the electric emery wheel used, the nut removed and a similar nut.

How to remove the nut was a question. Attempt to file the nut was a waste of time and effort as the nut consisted of case hardened steel. The question of calling an automobile mechanic in on the case was thought of, but because of the time of night it was not carried out. A trip down to the hospital carpenter's workshop was made in the hope of finding something that would aid. Another file, a hack saw, and a small electric emery wheel were found.

The file had already proved of no aid, and because of the swelling of this penis and length of the saw, it could not be used. But the electric emery wheel proved to be a life-saver.

The edematous tissues were retracted and protected by metal spatulae. The nut was then grasped with a strong bone forceps and held steady. Ice water from an irrigating can was continuously run on the nut and the electric emery wheel began its work.

The nut had to be ground entirely through on one side and almost down to the threads on the other side before it could be opened and removed.

The grinding required two hours and the patient stood the ordeal nicely no general anesthetic being used. The bladder was empty at the end of the operation and the catheter was removed. It was gratifying to find no break in the skin of the penis. A warm wet saline dressing was then applied. The patient spent a very good night afterwards and voided on waking, although there was still a great deal of swelling and discoloration. The patient was allowed to leave the hospital the following afternoon.

The nut after being removed was shown to have a 3/8-inch bore, 7/16-inch width, and 7/8-inch over all, with deep threads and was hexagonal in shape.

Correspondence

Amaurotic Family Idiocy.

COLONY, VA.,
OCTOBER 12, 1935.

TO THE EDITOR:

In October, there was an article in the MONTHLY, written by Dr. D. L. Harrell, Jr., Dr. H. L. Riley, Jr., and myself from this institution, being a case report of three cases of Amaurotic Family Idiocy.

In several places in this paper the term "idiopathic epilepsy" is used. What we meant was "symptomatic epilepsy."

Recently there has been a great deal of discussion about *idiopathic* and *symptomatic* epilepsy and we

should appreciate it very much if you would make note of this correction.

G. B. ARNOLD, M. D.,
Superintendent.

Health at the Masonic Home of Virginia.

RICHMOND, VA.,
OCTOBER 21, 1935.

TO THE EDITOR:

I would like to make a record in our VIRGINIA MEDICAL MONTHLY of what I consider a most unusual finding. I made a thorough physical—including Wassermanns—on all of the children of the Masonic Home of Virginia in 1928 and found all normal. I made another during August of this year, taking the 127 who had come in since 1928 first and the others after—over 200 in all—and found all at this time in excellent condition, normal in every way—a few minor defects such as teeth or tonsils, which were remedied at once. I have reported these findings to several friends, who are in a position to know, and they have all said they do not believe there is another institution of any kind, anywhere, which would be able to make the same showing. Wassermanns, made in the State laboratory, were all negative both times.

RAMON D. GARCIN, M. D.

Report of Corrections of Physical Defects, Smallpox Vaccinations, and Diphtheria Immunizations, Among the School Children of Virginia.

RICHMOND, VA.,
OCTOBER 14, 1935.

TO THE EDITOR:

I am submitting for publication, if you so desire, some statistics compiled from reports of the Division Superintendents of Schools for 1934-1935, which no doubt, will be of interest to the physicians of the State.

ELIOT V. GRAVES,
Supervisor Physical and Health Education.

NOTE: By eye, dental or throat correction is meant, pupil fitted with glasses; a certificate from a dentist that ALL necessary dental corrections have been made; tonsils or adenoids have been removed this year.

By smallpox vaccination is meant, a pupil who has ever been successfully vaccinated against smallpox. By diphtheria immunization is meant, a pupil who has ever been given toxoid or three doses of toxin-antitoxin, or is found to be Schick negative.

The percentages in this report in most instances are below the actual work done in the schools, because they are based on the enrollment. Often pupils will change schools or drop out, and consequently do not stay in school long enough for the teachers to record the correction, so the enrollment of such pupils is often counted twice and the corrections only once, or not at all. The enrollment is given for both the elementary and high schools, and the corrections are often given only for the elementary grades. Frequently the schools that show 80 per cent or above in smallpox vaccinations really have practically 100 per cent vaccinations.

Counties	% Vision Corrected	% Teeth Corrected	% Throats Corrected	% Diphtheria Immunizations	% Smallpox Vaccinations
Accomac	1.8	8.1	.8	43.9	100.0
Albemarle	1.5	10.4	2.4	37.7	92.2
Alleghany	1.4	6.3	1.5	67.4	93.4
Amelia	1.0	9.6	.9	67.8	75.1
Amherst	1.1	12.8	1.1	28.3	40.2
Appomattox	1.8	10.4	1.4	53.0	68.0
Arlington	2.2	24.1	2.0	90.0	100.0
Augusta	2.3	15.0	2.2	79.3	98.6
Bath	4.2	6.6	4.0	66.6	83.2
Bedford	1.5	10.4	3.0	50.6	76.8
Bland	1.0	2.0	.5	73.1	----
Botetourt	.9	8.2	1.5	41.5	84.1
Brunswick	1.4	15.1	4.3	50.1	56.5
*Buchanan	.3	3.5	.5	37.4	60.0
Buckingham	.5	3.9	1.0	49.7	49.7
Campbell	1.6	7.5	1.2	46.6	60.1
Caroline	1.2	8.2	1.8	23.2	69.1
Carroll	2.0	9.5	1.0	75.3	88.1
Charles City	1.3	3.8	.4	60.6	80.7
Charlotte	.3	8.8	.4	67.4	82.5
Chesterfield	3.5	14.0	2.1	42.0	78.9
Clarke	1.7	14.7	1.1	93.8	100.0
Craig	.3	5.6	.6	50.8	55.2
Culpeper	2.6	17.8	1.1	57.1	77.0
Cumberland	1.7	5.8	1.3	54.3	75.0
*Dickenson	.9	25.0	1.1	60.6	81.5
Dinwiddie	1.5	9.6	.9	25.2	72.9
Elizabeth City	2.2	23.9	2.9	25.9	74.4
Essex	1.0	3.6	.4	40.2	71.9
Fairfax	1.5	8.5	4.2	93.5	95.2
Fauquier	.3	4.5	1.1	13.0	55.0
Floyd	1.0	10.3	.8	11.0	60.0
Fluvanna	.7	21.2	1.4	76.8	77.9
Franklin	1.1	8.5	.9	13.0	12.3
Frederick	2.0	15.0	2.0	59.0	90.0
Giles	.9	4.8	.7	42.8	35.2
Gloucester	1.5	8.8	1.1	47.7	75.1
Goochland	.9	6.7	.5	54.6	65.9
Grayson	.8	6.8	.6	33.4	44.6
Greenesville	1.1	16.2	.7	85.8	94.7
Halifax	1.5	7.3	.7	44.8	77.3

	% Vision Corrected	% Teeth Corrected	% Throats Corrected	% Diphtheria Immunizations	% Smallpox Vaccinations
Hanover	1.3	6.3	.9	36.4	48.5
Henrico	2.0	20.0	1.5	85.0	100.0
Henry	.5	8.0	1.2	22.9	88.2
Highland	1.9	12.6	1.8	42.5	95.0
Isle of Wight	2.0	10.3	1.1	84.1	97.8
James City	.9	5.3	.5	53.9	90.1
King George	2.2	46.0	1.0	76.7	81.4
King and Queen	.9	5.6	.6	30.4	77.8
King William	1.9	25.8	2.0	63.5	71.6
Lancaster	3.6	14.0	1.7	65.6	95.3
Lee	.6	8.5	1.4	29.1	26.9
Loudoun	1.4	10.6	.7	66.5	77.1
Louisa	.5	7.7	.6	51.2	65.5
Lunenberg	2.8	13.9	2.1	40.0	83.4
Madison	.7	10.2	.4	46.4	68.5
Mathews	1.1	14.8	2.5	13.9	70.6
*Mecklenberg	1.6	7.1	.9	55.4	55.1
Middlesex	1.3	5.7	.6	48.1	58.6
Montgomery	2.4	8.8	1.3	26.9	84.1
Nansemond	1.2	11.2	1.5	63.0	84.0
Nelson	----	----	----	----	----
New Kent	1.7	10.0	.8	60.7	88.0
Norfolk	1.3	9.0	1.3	47.1	79.6
*Northampton	3.6	8.1	1.7	52.2	79.5
Northumberland	2.5	13.5	.8	71.9	93.8
Nottoway	.8	18.7	.8	65.3	81.9
Orange	3.5	10.2	3.5	60.0	90.0
Page	1.9	8.5	.4	26.7	28.3
Patrick	.5	4.1	1.0	13.0	55.7
Pittsylvania	1.2	4.0	2.9	38.2	38.1
Powhatan	.7	7.8	1.4	41.0	90.5
Prince Edward	1.4	5.7	1.4	81.4	90.4
Prince George	2.1	6.5	.9	53.8	80.5
Princess Anne	1.3	12.7	1.5	49.2	48.8
Prince William	2.0	14.0	3.0	42.6	94.1
Pulaski	1.1	10.5	.7	39.4	84.3
Rappahannock	1.5	24.9	.7	75.7	88.8
Richmond	.0	28.0	1.3	100.0	83.5
Roanoke	1.8	19.6	1.1	18.7	57.8
Rockbridge	2.1	22.4	2.4	65.5	88.8
Rockingham	1.7	11.7	.9	52.7	85.8
Russell	1.0	8.9	1.0	47.1	60.7
Scott	.5	1.0	.9	18.8	24.2
Shenandoah	1.7	13.8	.7	34.5	90.2
Smyth	1.0	7.2	1.1	26.8	40.0
Southampton	1.0	7.2	.9	77.2	85.2
Spotsylvania	1.4	8.2	1.7	43.3	54.9
Stafford	2.1	14.9	1.2	37.0	90.9
Surry	.5	8.1	1.0	59.0	91.5
Sussex	1.2	11.5	1.4	45.2	82.3
Tazewell	1.3	14.1	1.5	71.5	34.3
Warren	1.1	27.3	2.6	69.1	96.9
Warwick	2.5	20.8	1.2	45.5	82.5
Washington	2.2	17.6	1.6	35.5	88.2
Westmoreland	.0	33.3	2.5	100.0	100.0
Wise	1.8	10.7	1.9	28.0	47.3
Wythe	1.8	6.7	1.3	41.1	80.0
York	1.3	14.6	1.8	33.4	89.1
Total Counties	1.5	12.0	1.4	47.8	69.6
Cities					
Alexandria	2.8	8.6	2.9	32.7	58.7
Bristol	.7	5.9	.5	16.0	52.9
Buena Vista	2.4	7.6	1.1	35.2	93.5
Charlottesville	3.2	6.7	1.0	25.0	50.3
Clifton Forge	1.1	7.5	1.6	19.7	66.1
Danville	1.4	17.6	1.9	54.8	90.3
Fredericksburg	1.4	20.1	1.6	50.6	82.0
Hampton	3.5	17.3	1.3	19.7	37.1
Harrisonburg	7.2	34.0	3.9	54.0	89.0
Hopewell	.9	3.1	.5	39.0	45.8
Lynchburg	2.0	21.8	3.5	58.0	100.0
Martinsville	2.5	15.9	1.9	33.4	71.1
Newport News	1.5	10.0	1.2	26.0	71.4
Norfolk	1.2	18.1	1.9	62.8	99.5
Petersburg	.9	3.4	1.7	----	65.7
Portsmouth	1.9	8.6	3.6	9.2	87.0
xRichmond	3.3	17.2	2.6	40.0	100.0
*Roanoke	2.6	8.4	1.4	32.0	85.4
South Norfolk	.8	8.9	.8	24.1	73.2
Staunton	4.8	35.0	6.2	55.7	94.8
Suffolk	3.6	10.0	2.1	67.4	94.5
Williamsburg	2.3	5.7	.4	30.0	100.0
Winchester	1.5	31.4	3.8	20.7	98.7
Total Cities	2.3	13.8	2.3	38.9	87.5
Total Counties	1.5	12.0	1.4	47.8	69.6
Grand Total	1.7	12.9	1.6	45.5	74.2

The American Public Health Association appraisal form for rural communities allows the following evaluations for an ideal Health Department: 15 per cent teeth corrections; 2.5 per cent of school population fitted with glasses; 4 per cent throat corrections; 50 per cent diphtheria immunizations.

*1934 Enrollment.
xUses Seven-Point standard.

Public Health Statistics

I. C. RIGGIN, M. D.
State Health Commissioner of Virginia

The communicable disease reports received at the office of Dr. G. F. McGinnes, State Epidemiologist, for the month of September, 1935, show the following cases compared with the same month in 1934:

	1935	1934
Typhoid and Paratyphoid Fever	82	168
Diphtheria	115	221
Scarlet Fever	97	235
Measles	25	64
Meningitis	9	8
Poliomyelitis	64	22
Rocky Mountain Spotted Fever	2	6
Typhus Fever	1	1
Undulant Fever	0	2
Tularaemia	3	4
Smallpox	0	0

From the Vital Statistics report for August, 1935, from the office of Dr. W. A. Plecker, State Registrar, we quote as follows: "During the month of August there were 2,103 deaths. Of these there were 13 from typhoid fever, 1 undulant fever, 1 measles, 13 whooping cough, 6 diphtheria, 12 influenza, 20 dysentery, 85 diarrhea, 8 poliomyelitis, 1 lethargic encephalitis, 1 epidemic meningitis, 1 rabies, 7 tetanus, 149 tuberculosis (all forms), 16 syphilis, 4 malaria, 1 Rocky Mountain Spotted Fever, 11 pellagra and 39 pneumonia (all forms)."

In view of the increased prevalence of poliomyelitis during the past summer, the reported cases of this disease shown for the month of September represent a marked decrease from the figures previously reported for July and August, 1935. A review of the months of May through September, 1935, shows the following number of cases reported: May, 4; June, 52; July, 244; August, 278; September, 64. The peak of this increased prevalence was reached during the last week in July and the first week in August with a continued decline since that time. During the month of August there were 8 deaths attributed to this disease. There were 278 cases reported during this month which would give a case fatality rate of 2.8. Perhaps of some interest is the fact that during this same month (August, 1935) there were 190 reported cases of typhoid and paratyphoid fever with 13 deaths listed for these diseases, giving a case fatality rate of 6.8.

The reported cases of diphtheria, scarlet fever, typhoid and paratyphoid fever, and measles, for September, 1935, show a decided decrease from those reported for the same month in 1934. Concerning diphtheria, the last two weeks in October and the first week in November is the period of highest incidence of this disease in Virginia; we may therefore expect an increase during this period. The decrease in measles has been previously attributed to the expected drop after the 1934 peak in the three- or four-year cycle of the disease.

The one death reported from rabies is of interest because of its rarity in Virginia.

The seven deaths reported from tetanus is rather striking. A review of the reported deaths from this disease for 1935 show the following cases according to months: January, 1; February, 0; March, 1; April, 0; May, 1; June, 3; July, 2; August, 7. The distribution of these cases reported for August was as follows: Richmond City, 1; Henry County, 1; Middlesex County, 1; Northampton County, 1; Danville City, 1; Fredericksburg City, 1; Newport News City, 1.

Woman's Auxiliary to the Medical Society of Va.

President—MRS. FLETCHER J. WRIGHT, 49 S. Market St., Petersburg.

President-Elect—MRS. F. D. WILSON, 5352 Studley Ave., Norfolk.

Corresponding Secretary—MRS. MEADE EDMUNDS, Walnut Hill, Petersburg.

Recording Secretary—MRS. HAROLD W. POTTER, 70 33rd St., Newport News.

Treasurer—MRS. REUBEN F. SIMMS, 2502 Hawthorne Ave., Richmond.

Greetings!

At the beginning of a new season, and a new administration, we would like to say to every member of every Auxiliary in our State, and to every doctor's wife who is not a member—GREETINGS! Would that this message could be given in person, for then we could not only greet you, but appeal to you individually, to give us your loyal support, and your needed cooperation and help.

Our greatest need in the Woman's Auxiliary to the Medical Society of Virginia, still, is further extension. We cannot organize in localities where the doctors themselves are not interested in having an Auxiliary to their County Society, so we are hoping that the doctors themselves may glance over this article, and that some of them will be interested enough to write us, "We do want an Auxiliary." We'll do our part to see that you have one.

The Auxiliaries do not set as their objective, "All work and no play," for there is much real pleasure and enjoyment found in meeting with our

neighbors, some of whom we have been too busy to see often, and of making new friends, some of whom we would not contact in any other way.

In no way, is the Auxiliary an interfering factor. We stand ready to help, without forcing ourselves or our ideas upon any individual, group, or organization.

Regardless of secretaries and office assistants in the office, or servants in the home, the telephone must be nursed to a large degree, and the doctor's interests looked out for, by his wife. Every wife will tell you that she is needed in many ways, to assist her doctor in his work. We believe that a concerted effort, with combined unity of all of the wives in the profession, will be of equal help to the medical men in their various counties, and in the State, without in the least interfering with the duties of each individual. Our State Chairmen stand ready to help you organize, or to make your Auxiliary more interesting and worth while, and will furnish you material for your programs, or for health education.

We believe with Shakespeare that, "Our doubts are traitors, and make us lose the good we oft might win, by fearing to attempt."

Attempt to organize a new Auxiliary; attempt to make your own more worth while, and we know that your community, and the Medical Society of Virginia will reap splendid results during the coming year.

Again, greetings and best wishes.

Faithfully yours,

ANNE SEAY WRIGHT,
(MRS. FLETCHER J. WRIGHT),
President.

Retrospection.

In retrospection of a year's work of the Woman's Auxiliary to the Medical Society of Virginia, of the many responsibilities involved and the hours spent in an effort to perpetuate the ideals of the Society to which we are an Auxiliary, permit me to say that I count it no small privilege to have assisted in my humble way by burning the "oil of time" and applying "tincture of patience" so that we may look back to the year with a sense of achievement.

Perhaps a review of the year's work may reveal apparent neglect of responsibilities, but let me assure you that where errors were made they were omissions of the mind and not of the heart.

The duties of a State president are quite varied, sometimes they seem complex, nevertheless they are absorbingly interesting and the very nature of these duties impels one to realize that the power of our organization is in our auxiliaries and we must center our efforts in the formation of women's groups in many counties throughout the State. We now have a total of nine auxiliaries representing twenty-five counties and we also have one Junior Auxiliary.

"Hygeia" is the official Journal of Health of the American Medical Association and it is incumbent upon us to foster its growth and insist that each auxiliary president appoint a *Hygeia* Chairman. You are urged to read Auxiliary News in the *Bulletin of the American Medical Association* and also in your own VIRGINIA MEDICAL MONTHLY.

We cooperated with the Maternity Center Association of New York in sponsoring programs for Mother's Day in each auxiliary. A telegram from the State President was sent to this association on Mother's Day commending their work in reducing the maternity death rate in this country. A telegram of appreciation was received from the President of that Association.

A Post-Convention Executive Board Meeting was held in Alexandria, October, 1934. The Mid-Winter Board Meeting took place in Richmond, March, 1935. The last Pre-Convention Meeting was held in Norfolk, October, 1935. All were well attended.

Your President attended the last Convention of the American Medical Association in Atlantic City, June, 1935, and represented your State at annual meeting of the Woman's Auxiliary to the District of Columbia Medical Society in Washington last May. I visited many of the State Auxiliaries. Regret that time did not permit visiting all groups.

Among recommendations adopted at the meeting in Norfolk were that this State observe annually a day of appreciation of the struggles and sacrifices that the medical profession has made in the defense of human living throughout the ages—that such a day be called "Doctor's Day" in commemoration of some member or some notable achievement in the Medical Arts of the State.

Several other recommendations adopted by the American Medical Association in Atlantic City in June, 1935, and of the Southern Medical Association and of our own State Chairman of Legislation, were adopted by our Auxiliary.

Your President suggests that each county auxiliary

concentrate, if feasible, on one definite project of the year.

I take this opportunity to express to the officers, members of the Executive Board and to Auxiliary members, my warm appreciation for their ever-ready cooperation and to the Advisory Council for its guidance and interest. I also wish to thank the Norfolk Committee for its loyal support in the preparation of program for this Convention.

It is a pleasant duty to voice my personal obligations to Miss Agnes Edwards, Executive Secretary to the Medical Society of Virginia, for her valuable assistance and counsel, and to the Editor of the VIRGINIA MEDICAL MONTHLY my grateful appreciation for the space allotted to Auxiliary News.

It has been a pleasure to have served you and I am proud to be in the list of my predecessors and am indebted to you for a broadening and strengthening of my own experiences.

May the administration of my successor inspire us to assume these obligations and work with her to attain broader and greater heights.

KATE C. BEAR,
(MRS. JOSEPH BEAR),
Retiring President,
Woman's Auxiliary to the
Medical Society of Virginia.

Truth About Medicine

NEW AND NON-OFFICIAL REMEDIES

The following products have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Non-official Remedies:

Diphtheria Toxoid, Alum Precipitated (Refined)—P. D. & Co.—This product (New and Non-official Remedies, 1935, p. 395) is also marketed in packages of one 0.5 c.c. vial and in packages of one 5 c.c. vial containing one and ten doses, respectively. Parke, Davis & Co., Detroit.

Diphtheria Toxoid.—(See New and Non-official Remedies, 1935, p. 395). For determining sensitivity to the non-antigenic portion of diphtheria toxoid, a diluted diphtheria toxoid is supplied. This is marketed in packages of one 0.5 c.c. vial and in packages of one 5 c.c. vial containing diluted diphtheria toxoid sufficient for five and fifty reaction tests, respectively. Parke, Davis & Co., Detroit. (*J. A. M. A.*, September 21, 1935, p. 966.)

Book Announcements

The Laboratory Notebook Method in Teaching Physical Diagnosis and Clinical History Recording. By LOGAN CLENDENING, M. D., Professor of Clinical Medicine in the University of Kansas. St. Louis. The C. V. Mosby Company. 1934. Octavo of 71 pages. Paper. Price 50 cents.

This little book is a most significant departure from the usual methods of teaching Physical Diagnosis. It is obviously not meant to replace the elementary courses in this subject given as a rule during the sophomore year in which physical findings in normal subjects and the variants usually associated with pathological changes in the body tissues are stressed, rather than the detailed clinical study of sick patients.

The proper place for it in a curriculum would seem to be as a guide to the very earliest studies in clinical medicine and its chief value would seem to be to point out the path to a thorough and orderly approach to the abstruse problems presented in the every-day study of patients whether in general practice, the outpatient department, or the hospital. The earlier such habits of mind are acquired and the more persistently they are encouraged, the more permanent and effective will they be. Dr. Clendening's ingenious method of clinical teaching appeals to me as a distinct and very practical advance beyond the more or less haphazard customs which have prevailed up to this time.

The criticisms which I would make of the text are few but seem to me to be worthy of note. In the chapters on "Heart Disease" no mention is made of blood pressure estimation though the average doctor uses the sphygmomanometer almost as regularly as he does his stethoscope; nor of electrocardiography or teleoroentgenography which have now come into every-day use and are generally considered as an integral part of physical diagnostic procedure. In the chapters on the "Lungs" roentgenography is again omitted.

The danger of such omissions seems to me to be a real one, in that it tends to give the student a false sense of security in his ability to diagnose pathological lesions by the four cardinal physical diagnostic methods alone, which of course will frequently lead him into error.

In the section of the book given over to "Exercises" we find such questions as—Name twenty diseases in which there are enlargements or masses

in the neck—Name ten causes of enlarged spleen—Name and describe the characteristics of the ten commonest abdominal tumors—What results from the thrombosis of the posterior inferior cerebellar artery? These are obviously intended for students well advanced in the study of clinical medicine, surgery and neurology.

The only laboratory procedures mentioned are in "Exercise 18" and include only a few questions on the urine, stool, sputum and vomitus. It seems to me that this section should either have been elaborated to cover at least the routine and every-day tests used in clinical medicine or should have been omitted entirely.

To summarize briefly: (1) The principle which underlies Dr. Clendening's work is reasonable and sound and marks a very real advance.

(2) For the fullest development of this principle it seems to me that there should be a series of little books rather than one book; (a) a pre-clinical primer, for sophomores; (b) an introduction to clinical medicine, for juniors; and (c) a more elaborate work along these same lines to bring together all of physical, mechanical and chemical methods used in modern medicine for the study of sick persons.

J. POWELL WILLIAMS.

The Nervous Breakdown. By the Editors of "Fortune." Doubleday, Doran and Company, Inc., New York. 1935. 12 mo. of 85 pages. Cloth. Price, $1.00.

This unfortunately entitled little book came out as an article in "Fortune" which the writer read some months ago. Of course there will be differences of opinion but personally I think the whole publication was unfortunate. In the first place, a group of physicians in mental hygiene, psychiatry and psychonanalysis were consulted. These opinions were then boiled together in a pot-pouri by a lay writer after which the authorities were again called upon and the dissents of those not agreeing were put in footnotes. The footnotes are by far the best part of the book. The plan adopted was very much like taking some special problem in religion, for instance the question of the immaculate conception or the Trinity, and then getting the opinions of a Presbyterian minister, a Baptist preacher, an Episcopal parson, a Jewish rabbi, a Catholic priest, a Mohammedan and a Buddhist and letting someone who knew absolutely nothing about religion mix these together and expound the theology to the public.

Across the top of the article in "Fortune" were the pictures of these various authorities. Knowing practically all of them one would say that these photographs certainly did not do them justice. Probably pictures of their fingerprints would have been more handsome and identifying.

In "The Nervous Breakdown" certainly no one psychiatrist mental hygienist or psychoanalyst could agree in much more than half of what is put down in the regular script. The definition of a nervous breakdown is illuminating. "A nervous breakdown may be defined as a state in which psychic (mental-emotional) factors prevent one from carrying on the business of normal living."

The case histories cited are certainly amusing. So are some of the classifications and much of the nomenclature. The chapter entitled "Psychoanalysis: the Technique," is a scream.

Well, there is no use going on any further. Physicians might read it if they have the time to waste. It will not hurt the layman's digestion, although he would not know whether he was eating American hash, Chinese chop-suey or Hungarian goulash.

B. R. T.

Virginia Medical Monthly

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Editorial

The President.

To be President of the Medical Society of Virginia is an honorable distinction and especially is it gratifying when it comes to one as the spontaneous expression of the affection and confidence on the part of one's fellow physicians throughout the State. Thus it came to our new president, Philip St. Leger Moncure, of Norfolk. The son of St. Leger Lander Moncure and Lucy George Oliver, he was born on January 27, 1867, at Ruther Glen in the historic county of Caroline. Descended from a long line of distinguished Virginians, he early evinced a desire to enter the profession of medicine.

His primary education was received at home and in the public schools near his home. In 1888 he completed a four-year course in the Caroline County Graded School at Bowling Green. While there he came under the influence of two noted teachers, William A. Moncure, now Judge of the Chancery Court of Richmond, and the late John M. Garnett.

Unable at this time to pursue the study of medicine, he spent the next six years in the office of the R. F. & P. Railroad in Richmond. During this period, his spare time was utilized in the study of mathematics, drawing and chemistry, still with an eye to accomplishing his boyhood ambition of becoming a physician. In 1894 he entered the Medical College of Virginia, where he distinguished himself in materia medica, surgery, therapeutics and in the study of nervous diseases. In 1897 he graduated fifth in his class, and accepted an appointment as intern at St. Vincent's Hospital in Norfolk. On the completion of his internship, he entered the practice of medicine and surgery in Norfolk. Since then he has diligently studied to perfect himself in his chosen profession, by attendance on the leading clinics in this country and abroad, and by constant association with his fellow physicians in various scientific groups. He is a past president of the Norfolk County Medical Society, a charter member of the Seaboard Medical Society, and a member of the American College of Surgeons, since its merger with the American Congress of Surgery in 1914. He has been a member of the State society since 1900 and a regular attendant at its meetings. Since 1917 he has been a member of the State Board of Medical Examiners, and is thus known to all the physicians in the State who have entered practice during the past eighteen years. He is also known, for his diligence, to those cultists and quacks who from time to time have striven to evade the Medical Practice Act of the State.

During all these busy years of practice, he has found time to interest himself in everything that concerned the general welfare of his fellow man. A thirty-third degree Mason, for the past ten years he has been almoner and chairman of the Scottish Rite Brothers. For twenty-five years he has taught anatomy and chemistry in the St. Vincent's School

of Nursing. Since beginning practice he has been on the gynecological staff of St. Vincent's Hospital and has conducted the gynecological clinic at that institution. He has found time to make important contributions to the literature of surgery and gynecology, and even to digress into the field of roentgenology. For a number of years he was a member of the American Roentgen Ray Society.

The younger physicians who have come under his influence can testify to his interest in medical education and his zealous desire to promote the welfare, not only of his beloved alma mater, but of medical education in general. For thirty-eight years he has practiced his profession and has made that profession more honorable. He has moved among us with a simplicity of manner, an unselfishness of purpose, and a charitableness of heart that has won and held the love and admiration of all that know him.

It is fitting at this time of unrest and uncertainty that the Society should have as its president, a man of wide experience, broad outlook and high ideals.

W. B. M.

PHILIP ST. LEGER MONCURE, M. D.,
President, Medical Society of Virginia.

Statues and Doctors.

Six doctors are buried in Westminster Abbey, John Hunter, Richard Mead, David Livingstone, Matthew Baillie, James Simpson and James Buchan. Sir James Y. Simpson's statue is a prominent object on Princess Street, Edinburgh. Crawford Long and Ephraim McDowell have statues erected to them in our national capitol. In Virginia as far as we know there are but two physicians whose life and work has been commemorated in the form of statues. In Fredericksburg stands the imposing equestrian figure of Dr. Hugh Mercer, Revolutionary general and hero. In the Capitol Square at Richmond is a statue of Dr. Hunter Holmes McGuire. Last month a group of medical students, doctors and notables gathered about the statue of Dr. McGuire. It had been a hundred years since his birth. They had come there to honor a doctor who was once Medical Director of the Second Army Corps of the Confederate Army; who founded the University College of Medicine, and was its first professor of surgery; who was a pioneer in prostatic surgery, and who was honored with the presidency of the American Surgical Association and later with that of the American Medical Association, a "useful citizen, broad humanitarian, gifted in mind and generous in heart."

Rheumatism and Tuberculosis.

The cause of rheumatism is still shrouded in mystery. The advocates of an infectious etiology and those who lean toward an allergic basis are about equally divided. There have been other explanations of the disease. In France, for example, the opinion is said to be still current that rheumatic fever is a manifestation of tuberculosis. This point of view was recently discussed by Professor W. T. Ritchie at a meeting of the Medico-Chirurgical Society of Edinburgh. Among other things Professor Ritchie said: "Like tuberculosis rheumatism is not a hereditary disease, but several cases may occur in any one family. Moreover, although the first obvious manifestations of rheumatism, like those of tuberculosis, may appear in the schoolchild or adolescent, the pathological process almost certainly begins at an earlier age." The problem of prevention in both diseases is peculiarly alike. "To combat acute rheumatism the same general principles should be adopted as in the fight against tuberculosis—if our people were better housed there

would be less rheumatism." In commenting upon Professor Ritchie's remarks J. G. McCrie compared the Aschoff nodule to the tubercle.

Anyone who has handled large numbers of tuberculous patients can recall numerous instances in which painful joints and muscles proved troublesome and puzzling. Occasionally in an unexplained continuous fever painful swollen joints may cause the clinician to consider seriously rheumatic fever until signs of pleurisy or parenchymal pulmonary tuberculosis indicate the exact causative factor. A number of years ago Lawrason Brown, in commenting upon the relationship of rheumatism to tuberculosis, stated that acute rheumatic fever almost never developed in the tuberculous—he had seen but one case among two thousand patients. He admitted however the frequency of joint pains and myalgias among the tuberculous and he called attention to the work of Poncet in France who described a form of tuberculous arthritis occurring chiefly among children with local symptoms outweighing general symptoms and significantly resistant to the salicylates.

There is perhaps no bacteriological relationship between tuberculosis and rheumatic fever, but tuberculosis may exhibit rheumatic pains, and in the early stage, particularly before the disease has declared itself, multiple painful and swollen joints in the presence of fever may prove puzzling, even suggestive of acute rheumatic fever.

New Points of View.

The paper of Dr. W. W. Waddell and Dr. C. W. Purcell on Poliomyelitis in Charlottesville during the past summer, read before the recent meeting of the Medical Society of Virginia, was an important contribution. These authors report 111 cases of poliomyelitis seen by them in the Outpatient Department of the University Hospital and estimate that no less than 1,500 cases must have occurred in the city of Charlottesville and the county of Albemarle in the period during which they made their observations. The records of the Virginia State Board of Health for the months of July, August and September show that a total of 166 cases were reported from the city of Charlottesville and the county of Albemarle together, about one-tenth of the number estimated by Drs. Waddell and Purcell. The State Board of Health reports a total of 647 cases of poliomyelitis as having occurred in Virginia during the summer months of June, July, August and September. If Drs. Waddell and Purcell's estimate is correct for Charlottesville and Albemarle County and the same proportion of actual to reported cases is assumed to have existed in the State, there must have been no less than 6,000 cases in Virginia during last summer. If this is true the contention that no epidemic existed in Virginia at this time can hardly be considered to carry much weight.

Drs. Waddell and Purcell state that thirty-nine of their cases exhibited an increase of the protein content of the cerebro-spinal fluid without an increase of cells. They consider the finding of globulin in the absence of a pleocytosis a valuable early diagnostic sign in acute poliomyelitis. If their findings can be substantiated they will no doubt have made a valuable contribution towards the early diagnosis of a disease which in its pre-paralytic stage is rarely correctly diagnosed except during times of epidemic. The conclusions of these authors are of course at variance with the orthodox point of view which has stressed a pleocytosis rather than an increase of globulin as a finding of early diagnostic significance. Landon and Smith in their recent monograph on the subject state that "The *protein content* of the spinal fluid is usually low or normal early in the disease. . . . The cell count and the protein content thus show little correlation, the cells reaching maximum in the early days of the illness when the globulin is normal or only slightly increased, whereas the increased protein may persist for some time after the cells reach normal."

Department of Clinical and Medical Education of the Medical Society of Virginia

Program for Postgraduate Clinic at the University of Virginia.

The Department of Medicine of the University of Virginia will hold its sixteenth postgraduate clinic at the University of Virginia hospital on Friday, November 15, 1935. This clinic is conducted in cooperation with the Department of Clinical and Medical Education. The program follows:

9:00- 9:30	Registration, University of Virginia Hospital.
	MORNING SESSION
9:30-10:00	Pregnancy and Hypertension. Dr. J. E. Wood.
10:00-10:10	Discussion.
10:10-10:40	Present-Day Treatment of Malignant Disease. Dr. V. W. Archer.
10:40-10:50	Discussion.
10:50-11:20	Indigestion. Dr. Staige D. Blackford.
11:20-11:30	Discussion.
11:30	Clinico-Pathological Conference. Dr. J. C. Flippin and Dr. James R. Cash.
12:15	Lunch.
	AFTERNOON SESSION
1:30	Surgical Clinic. Dr. Carrington Williams, of Richmond, Va.
2:15	Ward Rounds. (Details will be announced at time of Clinic.)
	Round Table.

Physicians of the State are cordially invited to attend and participate in the discussions. No admission will be charged.

Lecture Notes by Doctors Lyon and Ravenel Available.

About a hundred of the mimeographed lecture notes of Dr. George M. Lyon on Pediatrics, used by him in the Leesburg, Norfolk and Nassawadox short courses on Pediatrics are available. The lecture notes of Dr. Samuel F. Ravenel used in the short courses on Pediatrics given in Christiansburg and South Boston are being mimeographed at this time and prepared for distribution. One set of these notes will be sent free to doctors who enrolled in any of the clinics conducted by the Department of Clinical and Medical Education. For others there is a small charge of fifty cents for each set.

GEORGE B. ZEHMER,
Executive Secretary.

Proceedings of Societies

Southwestern Virginia Medical Society.

The Fall meeting of this Society was held in Roanoke, September 26th and 27th, with the President, Dr. Beverley F. Eckles, of Galax, presiding. At the banquet held on Thursday night Dr. Eckles gave his presidential address. Dr. W. T. Sanger, President of the Medical College of Virginia, was the invited speaker and gave an address on "Trends in Medical Education." A film strip on Cancer of the Breast was presented by the American Society for the Control of Cancer.

On Friday, clinics were held in the various Roanoke hospitals, after which the business meeting was held and the following officers elected: President, Dr. W. R. Whitman, Roanoke; vice-president, Dr. J. J. Giesen, Radford; and secretary-treasurer, Dr. H. W. Bachman, Bristol, re-elected

The Spring meeting of this Society will be held in Galax, Va.

The Mid-Tidewater Medical Society

Held its October meeting at Millers Tavern, Va., with Dr. E. L. W. Ferry, of Millers Tavern, presiding. Reports were heard on the meeting of the Medical Society of Virginia recently held in Norfolk.

Dr. J. Morrison Hutcheson, Richmond, was presented as the president-elect of the State Society and made some brief remarks. He brought to the attention of the members the increase in malaria, and

assigned as a cause the inadequate activities of the Malarial Control Commission.

A delicious dinner was served by the local committee of physicians and the ladies of the Auxiliary were present for this occasion.

At the evening session Dr. Frank S. Johns, Richmond, presented a paper on "Cancer of the Colon" and illustrated his talk with an interesting case report. Discussion of his paper was led by Dr. T. Dewey Davis, of Richmond, and followed by Dr. Guy Horsley, Dr. Harry Tabb and others. Dr. E. T. Gatewood, Richmond, spoke on the subject of "Foreign Bodies in the Trachea." Discussion of his paper was led by Dr. Basil Jones, of Richmond, and followed by Dr. Bates and others.

The report of the nominating committee was adopted as presented. Dr. J. Newton DeShazo, Centre Cross, was elected president-elect; Drs. Rob Hoskins, Harry Tabb, L. O. Powell, Virgil Stiff, R. D. Bates, Warner Lewis, J. R. Parker, and J. M. Gouldin, vice-presidents; and Dr. M. H. Harris, West Point, was re-elected secretary-treasurer. Dr. Thomas B. Latane will take the office of president at the next meeting, which will be held in West Point, Va., on the fourth Tuesday in January.

The Mecklenburg County Medical Society

Held its regular Fall meeting at Boydton, on September 24th, with Dr. L. H. Bracey, President, presiding. The meeting opened with a dinner, after which the following program was presented: Dr. W. B. McIlwaine, Petersburg, gave a talk on Infant Feeding; Dr. J. Morrison Hutcheson, Richmond, spoke on Treatment of Heart Failure without Oedema; and Dr. D. S. Daniel, Richmond, read a paper on The Injection Treatment of Varicose Veins and the Circulation of Blood in the Varicose Veins.

A letter was read from Dr. Wright Clarkson, Fourth District Councilor, Petersburg, regarding the formation of the Fourth District Medical Society, and it was moved and carried that the Society favored the formation of such an organization.

Dr. T. H. Valentine, Lawrenceville, County Health Officer, was made an honorary member, and the following were elected officers for the coming year: President, Dr. A. T. Finch, Chase City; vice-president, Dr. B. J. Montgomery, Baskerville; and secretary-treasurer, Dr. W. W. Wilkinson, LaCrosse, (re-elected).

The Bedford County Medical Society

Held its regular quarterly meeting on October 14th. This meeting was largely given over to a discussion of health work and the care of the poor and indigent. It was decided to take under consideration a plan whereby the doctors of the county could hold, from time to time, clinics in the public schools, immunizing the pupils of the school and children of pre-school age against diphtheria and smallpox; clinics for children who do not measure up to the five-point system; pre-natal clinics; venereal clinics; infant clinics; and dental clinics; and that they would petition their Supervisors to recognize and allow orders of the overseers of the poor for half regular price of service rendered to poor and indigent. It was felt that much, if not all, of the preventive work being done by means of Federal and State funds can be done by the physicians themselves and that most of these agencies are unnecessary.

Dr. C. H. Bondurant is president of this Society, and Dr. J. A. Rucker, secretary. Both are from Bedford.

Orange County Medical Society.

At the regular meeting of this Society held on October 4th, the following officers were elected: President, Dr. Lewis Holladay; vice-president, Dr. O. N. Shelton; and secretary-treasurer, Dr. Grant R. Elliott. All of these officers are from Orange, Va.

The Northampton County Medical Society

Held its regular quarterly meeting at Eastville, Va., on Wednesday, October 2nd. The guest speaker on this occasion was Dr. M. H. Todd, Norfolk, Va., whose subject was "Emergency Surgery." Resolutions were passed by the Society on the death of Dr. G. Fred Floyd.

The Roanoke Academy of Medicine

Held its first meeting of the Fall on the evening of October 7th, at which time the following were elected officers for the ensuing year: President, Dr. George Hurt; vice-presidents, Dr. L. G. Richards and Dr. H. H. Wescott; secretary-treasurer, Dr. B. P. Seward All are of Roanoke.

Southampton County Medical Society.

At the meeting of this Society on September 12th, Dr. J. M. Bland, Boykins, was elected president,

and Dr. W. T. McLemore, Courtland, re-elected secretary-treasurer.

Lynchburg Academy of Medicine.

At the regular meeting of this Society held on September 9th, Dr. J. W. Devine presented a paper on Thyroid Surgery.

At the October meeting, Dr. E. G. Scott presented a paper on Clinical Application of Electrocardiographic Studies.

News Notes

Medical Society of Virginia.

The meeting of the Society in Norfolk, October 15th, 16th, and 17th, was well attended and every one had a good time in addition to enjoying an excellent scientific program. The business sessions were all held on Tuesday and clinics by Dr. R. L. Payne and Dr. Walter B. Martin that afternoon. The first general session was that evening at eight o'clock, at which time the President, Dr. F. H. Smith, Abingdon, gave his address "Through a Doctor's Glasses." Dr. Arthur C. Christie, invited guest from Washington, D. C., also gave an address at this session on "The Answer of the Medical Profession to State Medicine."

A symposium on Therapy was held on Wednesday afternoon, at which time the principal speakers were Dr. F. C. Rinker, Norfolk; Dr. Joseph F. Geisinger, Richmond; Dr. T. J. Williams, University; and Dr. H. C. Henry, Petersburg. The second invited guest, Dr. James E. Paullin, Atlanta, Ga., was on the Wednesday evening program and presented a most interesting paper on "The Significance and Diagnostic Importance of Pain in Disease." Following the evening session, there was a reception, informal dance and buffet supper at the Woman's Club. An oyster roast on Lynnhaven Bay immediately followed the close of the meeting on Thursday.

At the closing session on Thursday, the 17th, Dr. P. St. L. Moncure, of Norfolk, assumed office and the following officers were announced for the coming year: President-elect, Dr. J. Morrison Hutcheson, Richmond; vice-presidents, Dr. C. Lydon Harrell, Norfolk, Dr. E. M. Chitwood, Wytheville, and Dr. J. A. Owen, Turbeville; executive secretary-treasurer, Miss Agnes Edwards, Richmond.

Drs. J. C. Flippin, University, and Walter B. Martin, Norfolk, were elected delegates to the American Medical Association, with Dr. Wright Clarkson, Petersburg, holding over, and Drs. Carrington Williams, Richmond, and I. C. Harrison, Danville, were elected alternates, with Dr. Roshier W. Miller, Richmond, holding over.

This being the year for election of councilors from the odd number districts, the following were elected:

1st District—Dr. Griffin Holland, Eastville.
3rd District—Dr. Roshier W. Miller, Richmond.
5th District—Dr. Beverley F. Eckles, Galax.
7th District—Dr. C. O. Dearmont, White Post
9th District—Dr. C. B. Bowyer, Stonega.

Altogether this was an excellent meeting and balmy, clear weather added greatly to the pleasure of those attending.

A report on the business transactions of the Society will appear in the minutes in the December issue of the MONTHLY.

Virginia Pediatric Society.

Virginia pediatricians held a meeting in Norfolk at the time of the State Society meeting and decided to re-organize and elected the following officers for the coming year: President, Dr. Basil Jones; vice-president, Dr. J. S. Weitzel; and secretary-treasurer, Dr. W. Ambrose McGee. All of the officers are of Richmond. The present plan is to have a clinical meeting in Richmond, probably in May, and to have a luncheon meeting for the election of officers at the time of the annual meeting of the Medical Society of Virginia.

The Virginia Urological Society

Also met at the time of the Norfolk meeting of the Medical Society of Virginia. Officers elected for the ensuing year are: President, Dr. J. F. Geisinger, Richmond; vice-president, Dr. C. J. Devine, Norfolk; and secretary-treasurer, Dr. L. D. Keyser, Roanoke.

Invitation to Southern Physicians to Attend the Southern Medical Association.

The 29th annual meeting of the Southern Medical Association, the second largest medical organization in the United States, will be held in St. Louis, November 19th-22nd, under the presidency of Dr. H. Marshall Taylor, of Jacksonville, Fla.

The unusual clinical facilities of the two medical schools and the numerous hospitals, combined with the high standing of the medical profession, and the excellent hotel accommodations make St. Louis an ideal city for this medical gathering.

Addresses and papers will be presented by distinguished clinicians, not only from the South, but from all over the United States as well as from several foreign countries.

The St. Louis Medical Society extends a very cordial invitation to all physicians in good standing in their State and Provincial medical societies to attend this meeting.

These meetings are always most enjoyable and we hope many of our members will arrange to attend.

Delegates to Association of Military Surgeons of the United States.

Brigadier-General S. Gardner Waller, The Adjutant General of Virginia, appointed Lieutenant-Colonel Nelson Mercer, Medical Corps, State Staff, Virginia National Guard, of Richmond, and Major George W. Schenck, Medical Corps, 111th Field Artillery, Virginia National Guard, of Norfolk, as delegates from the Virginia National Guard to the 43rd annual meeting of the Association of Military Surgeons of the United States in New York City, October 3rd to 6th.

All meetings were held in the grand ballroom of the Waldorf-Astoria Hotel, and were attended by about 350 members of the Association, and twenty-five delegates from foreign countries. Many interesting papers and demonstrations of modern developments in military medicine and surgery were presented, and excellent clinical cases were shown at the U. S. Veterans' Hospital in the Bronx. An inspection of the U. S. Military Academy at West Point, and a dress parade of cadets in honor of the Association were held on Sunday, October 6th. At the annual banquet a good time was had by all present.

The retiring President of the Association was Captain William Seaman Bainbridge, M. C., U. S. N. R., of Brooklyn, N. Y., and the present President is Medical Director Charles M. Griffith, U. S. Veterans' Administration, of Washington, D. C.

Ounces of Prevention.

Red Cross ministers to victims of disasters, nurses the wounded and is on call to provide nurses in any widespread epidemic, but it has progressed beyond curative measures alone and is devoting a large part of its energies to preventive work through nation-wide programs of first aid, water life saving, public health nursing and health education. In all of these activities the Red Cross has had the cooperation and guidance of the medical profession, without whose help little of real worth could have been accomplished.

Safeguarded by Red Cross training and supervision swimming and water sports have become the most universal in America and each year thousands of youngsters learn water safety at public pools, beaches and summer camps under the direction of Red Cross lifesavers. Thousands of lives are saved and untold suffering is spared victims of accidents and water sports because someone on the scene of an emergency has received training in Red Cross methods of first aid and life saving and is thus enabled to give help intelligently.

These Red Cross safety services are supported by the nation-wide annual Roll Call—just as are its disaster, nursing, veteran and civilian relief programs. Share in the work of your Red Cross and support it by enrolling as a member, November 11th-28th.

Medical College of Virginia News.

Through an anonymous gift of $300,000.00 and a Federal grant of $239,850.00, an outpatient clinic building with associated medical laboratories, which has been planned by the institution for several years, will shortly go under construction. The building will be seven stories in height, the four lower floors to be assigned to clinics, the upper floors for teaching laboratories in pathology, bacteriology, biochemistry, public health and preventive medicine. The building will be located in the hospital group and subsequently a new hospital will be constructed adjoining. The clinic and laboratory building is designed in the shape of a T; the hospital will be designed in the shape of a Maltese cross.

The 1935 graduating class of the school of medicine of seventy-six was approximately twenty less

than in previous years, reflecting the plan of the institution to reduce medical school enrollment.

Beginning with the session 1935-36 a three-year premedical college entrance requirement became effective in the school of medicine. For several years this has been virtually the requirement.

Exercises commemorating the one hundredth anniversary of the birth of Dr. Hunter McGuire were held on October 11th by the college and were broadcast over Station WRVA.

Speakers on this occasion were Honorable George C. Peery, Governor of Virginia; Colonel Robert T. Barton, whose father was president of the Board of Visitors of the University College of Medicine founded by Dr. McGuire; Dr. W. Lowndes Peple, who graduated under Dr. McGuire's administration at the University College of Medicine, and Dr. Marshall J. Payne of Staunton, Va., representing the medical profession and himself a personal friend of Dr. McGuire.

The exercises were preceded by academic procession from McGuire Hall to the Hunter McGuire statue in Capitol Square where the exercises were held. At the conclusion of the exercises a wreath was placed on the statue by Hunter Holmes McGuire, Jr., a great-grandson of Dr. McGuire.

News from University of Virginia, Department of Medicine.

Dr. James Young, Professor of Midwifery and Diseases of Women at the British Postgraduate School at Hammersmith Hospital, London, visited the Medical School on September 12th.

At the meeting of the University of Virginia Medical Society on October 7th Dr. W. W. Waddell spoke on the subject of Poliomyelitis.

Dr. James R. Cash and Dr. Oscar Swineford spoke before the Staff of the Southside Community Hospital in Farmville on October 7th. Dr. Swineford spoke on Allergy and Dr. Cash discussed a number of surgical pathological cases.

News from New York Polyclinic Medical School and Hospital.

At a meeting of the Clinical Society of the New York Polyclinic Medical School and Hospital, held in New York City, October 7th, the following program was presented:

1. "The Inhibiting of Thyroid Activity to Control Heart Disease" by Drs. Edmund Horgan and James Alexander Lyon, of Georgetown University, Washington, D. C. The discussion was opened by Drs. Richard Lewisohn and Robert Emery Brennan.
2. "Transthoracic Electrocardiography; the Theory and Clinical Application of the New Electrocardiographic Methods" by Dr. Albert S. Hyman, Witkin Foundation, New York. The discussion was opened by Drs. Louis F. Bishop, Jr., Joseph B. Wolffe and Harold E. B. Pardee.

Members of the Clinical and Surgical Association of Massachusetts were guests of the New York Polyclinic Medical School and Hospital on Tuesday and Wednesday, October 8th and 9th. The members of this Society visit medical schools each year and this year came to the New York Polyclinic Hospital, where a special program was presented.

Jefferson Medical College News.

The 111th Annual Session of the College was inaugurated on September 23, 1935, at eight o'clock in the Assembly Hall of the College. Mr. Wilfred W. Fry, President of the Board of Trustees, presided.

The Introductory Lecture was delivered by Louis H. H. Clerf, M. D., Professor of Bronchoscopy and Esophagoscopy, on "Medicine as a Career."

Dr. Ross V. Patterson, the Dean of the College, welcomed the 536 members of the student body. Of this number, 144 are new students, 134 admissions to the First-Year Class.

The members of the First-Year Class were prepared for medical study in fifty-seven different Institutions; all of them have pursued and completed four years of preliminary and preparatory study and have graduated from these institutions before being admitted to the medical course. Seventeen members of the First-Year Class are sons and other relatives of physicians, twelve of whom are Jefferson graduates.

Geographically, eighteen different States and Insular possessions are represented, as follows: Pennsylvania, New Jersey, Delaware, New York, North Carolina, West Virginia, Rhode Island, Connecticut Montana, Ohio, Massachusetts, Florida, Michigan, South Carolina, New Mexico, District of Columbia, Virginia, and Puerto Rico.

Dr. David M. Davis, Phoenix, Ariz., has been appointed professor of genito-urinary surgery at Jefferson Medical College to succeed the late Dr. Thomas C. Stellwagen. Dr. Davis is a graduate of Johns Hopkins University School of Medicine and was formerly a member of the faculty of the University of Rochester School of Medicine, Rochester, N. Y.

News Notes from the Duke University School of Medicine.

On September 30th the School of Medicine and the School of Nursing began their autumn quarters with a total of two hundred and seventeen students in the former school and a total of sixty-eight in the latter.

Eight of the seniors in the School of Medicine completed the course August 31st and are now interning in various hospitals.

The following new appointments have been made to the medical school faculty: Instructors in Biochemistry, Drs. T. B. Coolidge and H. D. Tidwell; Instructor in Medicine, Dr. W. M. Nicholson; Associate Professor of Bacteriology, Dr. N. F. Conant; and Instructor in Pediatrics, Dr. Louis Spekter.

Doctors Commissioned in Public Health Service.

Dr. Clifton K. Himmelsbach, class of '31, University of Virginia, has been promoted and commissioned as Passed Assistant Surgeon in the Regular Corps of the U. S. Public Health Service, to be effective from September 1st.

Dr. Wilson T. Sowder, class of '32, University of Virginia, who later interned at St. Luke's Hospital, San Francisco, has been appointed and commissioned as Assistant Surgeon in the Regular Corps of the U. S. Public Health Service, to rank as such from date of oath.

Interesting Radio Broadcast.

A number of high school debating leagues are much interested this year in the question: "Resolved: That the several states should enact legislation providing for a system of complete medical service available to all citizens at public expense." On account of the general interest pertaining to this subject, the National Broadcasting Company is providing the facilities of its Red Network for a chain broadcast on this question on Tuesday afternoon, November 12th, from 2:00 to 3:00 P. M., Eastern Standard Time. Speakers: *Affirmative,* William Trufont Foster, Director of the Pollak Foundation, and Professor Bower Aly, University of Missouri, Editor of the Debate Handbook; *Negative,* Dr. Morris Fishbein, Editor of the Journal of the American Medical Association, and Dr. R. G. Leland, Director of the Bureau of Medical Economics, American Medical Association.

Tune in on November 12th at 2:00 P. M.

Dr. C. C. Carpenter,

Professor of pathology at Wake Forest (N. C.) College of Medicine, has been appointed assistant dean of the school.

The Hospital Association of West Virginia,

At its annual meeting held recently, elected Dr. E. F. Heiskell, of Morgantown, as president. Dr. R. O. Rogers, of Bluefield, was elected first vice-president.

Married.

Dr. William Lemuel Griggs, Jr., St. Charles, Va., and Miss Dorothy Fugate, Clinchport, Va., September 7th.

Dr. Charles Atlas Bland, Clover, Va., and Miss Mary Ernest Johnson, Louisburg, N. C., August 31st. Dr. Bland was a member of the class of '35, Medical College of Virginia.

Dr. Harry G. Hudnall and Miss Elizabeth Beaufort Revercomb, both of Covington, Va., October 5th. Dr. Hudnall is a son of Dr. and Mrs. B. R. Hudnall, also of Covington.

Dr. Franklin Heywood Goodwin, class of '34, Medical College of Virginia, and Miss Virginia Mahone, Richmond, Va., October 1st. Dr. Goodwin was formerly of Clifton Forge, Va., but is now making his home in New York City.

Dr. Otis Gardner King, class of '31, Medical College of Virginia and recently of Bluefield, W. Va., and Miss Mayble Isobel Lawrence, Ashland, W. Va., October 8th.

Dr. Edward W. Perkins, Jr.,

Announces the opening of his office at 120 South Sycamore Street, Petersburg, Va., for the practice of Otolaryngology and the association with Dr. E. W. Perkins, Sr., in the practice of Physiotherapy. Dr. Perkins Jr., graduated from the Medical College of Virginia in 1933 and, after a years' internship

at Stuart Circle Hospital, Richmond, was resident in Otolaryngology for the next year at Roosevelt Hospital, New York City.

Dr. Howard Thompson Holden,

Class of '34, University of Virginia, Department of Medicine, who recently completed his internship at the Baroness Erlanger Hospital, Chattanooga, Tenn., is now located in the Smoky Mountains as Camp Surgeon for the CCC Company No. 426, at Ravenswood, N. C. In this work he has the rank of First Lieutenant, Medical Reserve Corps.

Dr. H. Cantor,

Petersburg, Va., attended the annual Graduate Fortnight of the New York Academy of Medicine which was held in New York City in October.

The Seaboard Medical Association of Virginia and the Carolinas

Will hold its fortieth annual meeting at the Chamberlin Hotel, Old Point Comfort, Va., December 3rd, 4th and 5th, and the hotel has offered a most attractive rate for those attending this convention. Among the guest speakers will be Honorable George C. Peery, Governor of Virginia, Surgeon General Hugh S. Cumming, of the U. S. Public Health Service, Dr. J. M. H. Rowland, Dean of the Medical School, University of Maryland, and Dr. George A. Torrence, Hot Springs, Va. There will be a symposium on Obstetrics, illustrated with movie films, and other attractive features, scientific and social. An invitation is extended all doctors interested in the Seaboard Association to attend this meeting.

Dr. A. M. Burfoot, Fentress, Va., is president, Dr. Clarence Porter Jones, Newport News, secretary, and Dr. F. C. Rinker, Norfolk, Va., treasurer.

Dr. Thomas M. Talbott,

Falls Church, Va., one of our oldest members, on October 17th celebrated his eighty-seventh birthday. Our congratulations and best wishes to him!

Attend Ohio Meeting.

Dr. Thomas J. Tudor, Norton, Va., and Dr. F. S. Givens, Wise, Va., attended the eighty-ninth annual meeting of the Ohio State Medical Association in Cincinnati, October 2nd-4th, and enjoyed a fine program as well as the annual banquet.

Dr. Robley D. Bates, Jr.,

Class of '34, Medical College of Virginia, who interned at Johnston-Willis Hospital, Richmond, is now serving a residency at the Woman's Hospital, Baltimore, Md.

Dr. S. B. Ellis,

Wakefield, Va., was elected president of the Wakefield Hunt Club, at its annual meeting held recently.

Virginia's Treasure Trove.

Such is the name of a most attractive Ballad of Good Roads, History and Progress, written by our own Dr. Roy K. Flannagan. There are sixty stanzas in rhyme, telling of the shrines and lovely historic spots in Virginia in such a clever way that we are thoroughly convinced "That here are things worth seeing." After we travel through Virginia with the author, we can say with him that

> "* * * every good American
> Should view these riches golden."

Dr. Lonsdale J. Roper,

Portsmouth, Va., was elected district governor of the Kiwanis Clubs at the meeting held in Danville, Va., in October, this district including Virginia, Maryland, Delaware, and the District of Columbia.

Dr. J. M. Biedler, Harrisonburg, Va., was elected lieutenant governor for Division Five.

Dr. William Grossman,

Class of '33, University of Virginia, Department of Medicine, has been appointed assistant State epidemiologist and will be associated with the office of Dr. G. F. McGinnes, head of the bureau of epidemiology. He succeeds Dr. Edward M. Holmes, now in Baltimore, where he plans to spend a year at the Johns Hopkins University, School of Hygiene and Public Health, under a fellowship granted by the medical research division of the Rockefeller Foundation.

Dr. M. H. Harris,

West Point, Va., has been appointed a member of the board of directors of the Kiwanis Club of that place.

Dr. R. L. Creekmur,

Formerly associated with Dr. Robert C. Bryan, has moved his offices from 917 West Franklin Street, to Dr. Bryan's office, 1108 West Franklin Street, Richmond, Va. Dr. Bryan is now in Arizona where he expects to spend some time.

American Medical Directory in Preparation.

The work of compiling the Fourteenth Edition of the American Directory is now well under way and all members of the medical profession wish to be properly listed in this important volume. This can only be done by your cooperation and we urge all members of the Medical Society of Virginia and other doctors in this State to fill out and return promptly the questionnaire sent out by the American Medical Association.

We wish we could have every eligible doctor in the State listed in this Directory as a member of his State medical association. This can only be done by those already members paying their dues promptly so that their names are not dropped from the Society roll and by those not yet affiliated with the State Society joining promptly.

Officers of component societies are urged to bring this matter to the attention of their members promptly.

Changes in Health Districts.

Dr. Shockley D. Gardner recently of South Boston, Va., has been appointed director of the Valley Health District and entered upon his duties the latter part of September, with headquarters in Harrisonburg. He succeeds Dr. R. D. Hollowell, who was awarded a fellowship for study at Johns Hopkins University, School of Hygiene and Public Health.

Dr. James N. Dudley, Danville, Va., of the class of '33, Medical College of Virginia, has been appointed director of the Henrico County Health District, and has headquarters at Henrico County Court House in Richmond.

Dr. Elizabeth C. Cole,

Recently on the staff of the Blue Ridge Sanatorium, is now located in Norfolk, Va., where she is engaged in general practice.

Dr. Robert C. Keys,

Who was medical officer at the CCC Camp at Lyndhurst, near Waynesboro, Va., has been transferred to Headquarters of the 14th Sub-District CCC, Snow Hill, Md.

Dr. J. Shelton Horsley,

Richmond, Va., attended the meeting of the Brooklyn (N. Y.) Surgical Society on October 3rd, and by invitation read a paper on "The Surgical Treatment of Duodenal Lesions."

Dr. Alexander G. Brown, Jr.,

Who was called to Paris the latter part of September to see a patient at the American Hospital, returned to his home in Richmond, Va., on the 17th of October.

Health Survey.

The United States Public Health Service, cooperating with state and city health departments, on October 15th began a survey of chronic illnesses and physical impairments in the general population. This work is being financed by the Works Progress Administration and will give employment to 30,000 workers selected from those on relief rolls.

Virginia is one of the nineteen States selected for study, and the following communities have been chosen tentatively for this work—Covington, Richmond, Roanoke, and Saltville. The plan of work is well described in the *Journal of the American Medical Association* of October 5, 1935, pages 1121 and 1127, and doctors in the localities named are especially urged to familiarize themselves with this project.

Dr. L. R. Thompson, Assistant Surgeon General, U. S. P. H. S., in charge of this work, states that "while no one can predict the results of the study, an analysis of the questions will show their importance in filling certain gaps in our present scientific knowledge" and "the cooperation of the medical profession in the areas selected for study is vital to the successful conduct of the study and to the ultimate value of the material collected."

The American Roentgen Ray Society

Held its annual meeting at Atlantic City, September 24-27, 1935, under the presidency of Dr. Fred M. Hodges, Richmond, Va. The meeting was attended by the largest membership in its history and the scientific program was of unusual interest.

The subject of the presidential address given by Dr. Hodges was "Roentgen Therapy of Certain Infections." The Caldwell lecture before the Society was given by Dr. J. Shelton Horsley, of Richmond, Va.

Dr. Charles A. Waters, of Baltimore, Md., was chosen president-elect for the coming year.

The next meeting of the society will be held in Cleveland, Ohio, September, 1936.

The National Society for the Prevention of Blindness

Will have its annual conference at the headquarters of the Society in Rockefeller Center, New York, December 5th to 7th. Among the topics to be discussed will be: Medical Social Eye Work; Prevention of Eye Accidents Caused by Fireworks; and The Division of Responsibility between Official and Unofficial Agencies in the Movement for Prevention of Blindness.

Mr. Lewis H. Carris, managing director, announces the election of the following as honorary vice-presidents of the Society: Dr. George E. DeSchweinitz of Philadelphia, emeritus professor of ophthalmology in the Medical School, University of Pennsylvania; Dr. John H. Finley, associate editor of the *New York Times;* and Miss Lillian D. Wald. president of the Henry Street Settlement of New York City. Other honorary vice-presidents of the Society are: United States Senator Thomas P. Gore, of Oklahoma; Hellen Keller, and Mrs. Winifred Holt Mather.

Dr. J. M. Hurt,

Blackstone, Va., has been appointed Norfolk and Western Railway surgeon for that district, succeeding the late Dr. W. W. Bennett of that place. Dr. Hurt is a graduate in medicine from the University of Virginia, class of '33, and interned at St. Elizabeth's Hospital, Richmond, Va.

Dr. Benjamin W. Rawles, Jr.,

Of the class of '30, University of Virginia, Department of Medicine, has been appointed a resident surgeon at the Jersey City Medical Center, Jersey City, N. J. He is a son of Dr. and Mrs. B. W. Rawles, of Richmond, Va.

Dr. Harry Golston,

Roanoke, Va., class of '26, Medical College of Virginia took postgraduate work in heart diseases this past summer, under Dr. Samuel A. Levine at the Harvard Medical School. Dr. Golston is limiting his work to internal medicine with special reference to heart diseases.

The Aero Medical Association of the United States

Is holding its seventh annual meeting at San Antonio, Texas, November 1st, 2nd, and 3rd, under the presidency of Dr. James C. Braswell, of Tulsa, Okla., a graduate of the Medical College of Virginia, class of 1912. This Association is composed of Flight Surgeons of the Medical Corps of the Army and Navy, and Medical Examiners of the Bureau of Air Commerce, numbering about 900 members, in all sections of the country and foreign possessions of the United States.

During the meeting frequent visits will be made to the School of Aviation Medicine of the Army at Randolph Field near San Antonio, and demonstrations will be conducted for the benefit of the attending members. Representatives of the Department of Commerce and the Army Air Corps Training Center will attend the meeting and present the latest developments in aviation.

Dr. Roy E. Whitehead, Chief of the Medical Section, Bureau of Air Commerce, of Washington, and a flier himself, will conduct a conference of all Medical Examiners during the meeting.

The American Society for the Control of Cancer

Has published Cancer Committee reports of ten Southern State Medical Societies. These reports show that from the total number (835) county medical societies in thirteen states, 416 known medical societies held cancer meetings in 1935. In this area there have been 207 radio talks and newspaper articles have been published in twelve states. Nurses' study courses on cancer have been carried on in 395 hospitals.

The cancer control work during the past three years has been confined for the most part to presentation to the medical profession of facts relative to cancer of the breast and uterus.

For Sale—

General office equipment for eye, ear, nose and throat practice. Property of doctor recently deceased. For information and prices write No. 498, care this journal. (*Adv.*)

Position Wanted.

Excellently qualified OALR man available; 31; married; class A Southern University graduate, with twenty months' otolaryngology in a New York teaching hospital. Can also do rhinoplastics. Licensed in Virginia. Answer "OALR," care this journal. (*Adv.*)

Wanted—

Graduate Resident Physician for Sheltering Arms Hospital, Richmond. For information, communicate with the Superintendent, 1008 East Clay Street, Richmond, Va. (*Adv.*)

Obituary Record

Dr. William Frank Henderson,

Well-known physician of Blacksburg, Va., died September 23rd, after several years of ill health. He was eighty-two years of age and a graduate of the former Washington University School of Medicine, Baltimore, in 1876. Dr. Henderson was for a number of years physician and surgeon and later consulting physician to the Virginia Polytechnic Institute. He practiced in Montgomery County for more than fifty years and was the oldest member of the Medical Society of Virginia in point of continuous membership, having joined in 1877. He is survived by his wife and three children.

Dr. John Lemuel Thornton,

Warrenton, Va., died October 7th, after a long illness with pulmonary tuberculosis complicated by nephritis. He was a native of Halifax County and forty years of age. His medical education was received at the Jefferson Medical College, Philadelphia, from which he graduated in 1924. Before entering upon the study of medicine, Dr. Thornton had served in the World War, with the rank of second lieutenant. He had been a member of the Medical Society of Virginia for some years. His wife and a son survive him.

Dr. John Breckenridge Catlett,

Prominent physician of Staunton, Va., died September 24th, after a lingering illness. He was born in Staunton sixty-nine years ago and studied medicine at the University of Virginia, graduating in the class of '88. Dr. Catlett had served for a number of years on the board of the county health department, and as county coroner and city coroner. He was the second president of the Augusta County Medical Society and for many years a member of the Medical Society of Virginia. His wife and one son survive him.

Dr. Hugh Ferguson Parrish,

Portsmouth, Va., died suddenly on October 7th, while on a trip to Baltimore, death being due to a heart attack. He was sixty-two years of age and graduated from the College of Medicine, University of Vermont, in 1893. He was a member of the City Council of Portsmouth and had practiced medicine in that city for the past thirty-seven years. His wife survives him.

Dr. Joseph Colt Bloodgood,

Nationally famous cancer expert of Johns Hopkins Hospital, Baltimore, died suddenly on the night of October 22nd, death being due to coronary thrombosis. Had he lived until November 1st, Dr. Bloodgood would have been sixty-eight years of age.

Dr. Max Myers Fields,

Dante, Va., died June 17th, death being due to pneumonia. He was thirty years of age and a graduate in medicine from the Medical College of Virginia in 1928.

Dr. Cecil Garrenton,

Bethel, N. C., died on August 10th, at the age of fifty-two years. He was graduated from the Medical College of Virginia in 1908 and was a past president of the Pitt County (N. C.) Medical Society.

Dr. Howard Marshall Batson,

Mannington, W. Va., died on August 10th, from a combination of diseases. He graduated from the Medical College of Virginia, Richmond, in 1906, and was connected with the medical corps of the Army during the World War.

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THE SIGNIFICANCE AND DIAGNOSTIC IMPORTANCE OF PAIN AS A SYMPTOM OF DISEASE.*

JAMES E. PAULLIN, M. D.,
Atlanta, Ga.

Progress in medicine goes hand in hand with the meticulous care and careful consideration given to the establishment of facts to be used either for the preservation of health, the alleviation of suffering or the cure of disease. Progress is intimately associated with investigation or research. Unfortunately, in the minds of most physicians, the idea of research in medicine is usually associated with well-equipped, expensive laboratories and with men who are particularly trained in this specialty, whereas in its broadest sense every doctor engaged in the practice of medicine is potentially an investigator. He has many opportunities of making contributions to the advancement of the art and the science of medicine. The essentials for success in this field are an alert mind, capable of observing accurately, and the power to reason logically in the interpretation of accumulated data. It matters not whether these data be obtained in the laboratory or in clinical observation at the bedside.

Individually, few physicians have ever made monumental discoveries, but collectively they have advanced the art and science of medicine to such a degree that the accomplishments in this field have excited the admiration of the human race. So true is this that there is a constant demand made upon the profession for more accurate methods of preventing disease and for speedier and better curative treatment for many of the chronic ailments. In keeping with the present changing social order these demands become insistent for immediate action, so that the profession many times will advance curative procedures which are hastily thought out and are too quickly utilized without having received the sanction of justifiable experimental and clinical research. This impatience on the part of the public and the feeling of an urge or a need for action on the part of the profession is fraught with the danger of advocating the use of methods for the relief of pain which are illogical, unwise, and at times capable of doing harm to those seeking aid. The inability of the profession as a whole to complacently meet these demands has caused the rise within the medical ranks of intense specialization with its advantages and disadvantages. The enthusiastic physician engaged in a particular line of work will frequently announce premately the discovery of some method which if utilized will relieve the suffering, the pain, the misery and discomfort of many hundreds and thousands of people afflicted with a particular ailment. Such a discovery excites in the minds of the laity hope which cannot always be justified. Witness within the past thirty-five years the rise in popularity and the gradual decline of many of the fads and fancies of medical practice. Practically all of these have added something worth while to the advancement of medical knowledge and have contributed, in some instances, to the cure of disease; but passing years and the method of trial and error have tempered many of the original claims for these discoveries.

In the average medical consultant's office examples of such enthusiasm on the part of physicians can be seen almost any day. For instance, the middle-aged man comes for relief of pain in his back which has not been benefited after the extraction of his teeth and the removal of his tonsils; or we may see the psycho-biological misfit who comes

*Read by invitation before the sixty-sixth annual session of the Medical Society of Virginia, at Norfolk, October 15-17, 1935.

with a story of having taken for months on end various gland preparations in order to cure the results of an environment to which he has been unable to adjust his personality; also the sufferer from various and sundry digestive disorders who has been restricted to this and that food and who now is a gastro-intestinal invalid, able to live on a very inadequate diet because of such marked sensitivity to various foods for the cure of such diseases as migraine, chronic urticaria, eczema, etc. Again, the loquacious individual, usually a woman, who presents herself with an abdomen unilaterally, medially, tangentially or bilaterally scarred by many surgeons in an effort to relieve an ever-present abdominal pain; as well as the unfortunate individual with congestive heart failure, the result of syphilitic aortic regurgitation, whose physician believed that a few doses of salvarsan would cure his syphilis. Many other examples could be cited to illustrate the fact that therapeutic procedures should not be universally accepted nor generally advocated until careful investigation over a period of time has proven their worth.

It is not my desire to in the slightest degree minimize the wonderful advances and contributions made to medical knowledge by the enthusiasm of those working in particular fields,—for example, consider the doctrine of focal infection which was so rampant and supposed to cure so many ailments only a few years ago. This was a wonderful contribution to medical knowledge, but the passage of time and mature deliberation have greatly modified many of the claims originally made for its curative value. One now approaches the problem with more consideration and does not advise the removal indiscriminately of all tonsils, teeth, etc., and so it is with many other procedures. All contain something of value which is capable of resulting in great good, but, if advised for all sufferers, will bring disappointment to the doctor and to the patient.

In a consideration of the question of pain, I do not come to you with any new discovery for the easy and quick diagnosis of its cause as a symptom of disease. On the other hand, I am here to ask that as physicians we utilize the true, trusted and tried methods at our disposal, viz., a careful history, a thorough physicial examination and, if necessary, the laboratory, before we rush out with our increasing therapeutic armamentarium, which may contain some remedies of value if wisely and judiciously employed.

Pain or misery is the most common complaint for which the patient seeks relief. It is usually the first evidence that something has gone wrong with the normal, harmonious physiological functioning of the body. Pain is an almost undefinable sensation yet all of us are familiar with what is meant when a patient comes with this complaint. We understand that he has an annoying, distracting, uncomfortable, perhaps incapacitating sensation from which he seeks relief. Only a few years ago it was commonly believed that all pain was caused by a demonstrable pathological lesion which produced definite changes in some organ or tissue of the body. This pathological process could be produced by the invasion from without of a virus, bacteria, or a chemical poison. After a careful and thorough search, if no such pathological lesion was demonstrated, the patient was told that he had a good imagination and that he utilized it successfully in producing a disturbing sensation which he should forget.

With the passage of time it was soon known through the brilliant researches, chiefly of the physiologists, that functional derangement of the harmonious working of an organ would produce pain indistinguishable from that caused by a known pathological process. An appreciation of this fact has brought forward much study of the sensation, pain, in an effort to arrive at a real understanding of its significance and importance. To this end, having passed through much of the enthusiasm of the early workers in seeking various cures for this sensation, we can now adjust ourselves to a calm consideration of its causes.

All of us are familiar with the common somatic pain and discomfort which results from physical trauma such as a fractured femur. We are equally as familiar with the pain resulting from inflammation such as a carbuncle. We know of the distressing pain resulting from obstruction to the flow of blood by an embolus or from thrombosis of an artery. The causes of pain such as this are obvious pathological lesions which can be seen and demonstrated. We know that these injuries or processes have caused a localized stimulation of the sensory nerve endings in the integument of the body where the lesion is located. Conditions such as these are simple enough and the diagnostic importance of pain is readily

appreciated; however, if the pain resulting from any one of these factors is long continued and associated with confining disability, another source of pain other than that mentioned immediately becomes apparent in that the economic status and the social security of the individual is jeopardized. There is added to the physical pain another misery which might not be so obvious but which will require study and observation to properly evaluate. There develops, with physical pain, mental misery, the result of anxiety, uncertainty, and the feeling of social insecurity, which may prolong and retard recovery. With practically all physical pain there is usually associated mental misery.

All of us are equally familiar with referred pain, that is, painful sensations referred to parts of the body quite remote from the lesion producing the pain. At the onset of an acute appendicitis the first pain experienced by the average individual is referred to the epigastrium and only later does the pain become localized to the lower right quadrant. For the correct interpretation of such phenomena as this it is essential that one be familiar with the intricate nerve supply of the internal organs through the autonomic or sympathetic nervous system and the intimate relationship existing between this system and the cerebro-spinal nerves. Any explanation of referred pain depends upon the wide distribution of nerves from the sympathetic system supplying the thoracic and abdominal viscera with many afferent and efferent pathways to the cerebro-spinal system; and from the cerebro-spinal system to the skin, the superficial blood vessels and muscles. Stimuli causing pain when applied to the cerebro-spinal nerves are wholly ineffective when applied to the organs innervated by the autonomic nervous system. Effective stimuli for the autonomic nerves are stretching of smooth muscle, traction or tension on a nerve, stretching the capsule of an organ, chemical changes in the body fluids and toxins of the infectious diseases. These stimuli when applied to the thoracic or abdominal viscera cause discomfort, not at the place of stimulation but at some point on the surface of the body. Pain referred to the neck and jaw as well as the arm and chest in patients with coronary occlusion; the crises and atypical attacks of abdominal pain, the result of syphilis of the central nervous system and brain tumors, are well known examples of referred pain. Chemical poisons such as lead, arsenic, mercury, etc., cause referred pain; in the acute infectious diseases—scarlet fever, measles, mumps, rheumatic fever,—pain may be referred to the abdomen and thorax. Certain intoxications such as diabetic coma, alcoholism, and the bite of the latrodectus mactans cause considerable difficulty in their differentiation from intra-abdominal lesions. Various other conditions might be mentioned to further confuse the picture of referred pain. Emotional states such as fear, anger, rage and various affective disorders acting through the diencephalon or by stimulating the ductless glands produce many types and degrees of pain and misery.

The intensity, the type and severity of reflex pain experienced depends on the psycho-biological pattern of the individual. His method of reaction to pain is determined in great part by his intelligence and his instinctive emotional nature. The strikingly different reactions observed in individuals to practically the same stimulus are well known,—one extreme is the stolid, phlegmatic person who suffers severely before complaining or seeking relief, while the other is the highly sensitive, emotional person who complains long and loudly of the most distressing pains "that cannot be endured for another minute, that are almost killing him," yet he is able to be up and about and, when his attention is otherwise distracted, forgets some of these "horrible things." The clinician will learn by careful observation to develop the ability to evaluate symptoms such as these. Such ability comes only to those who devote time, patience and study to these persons.

One of the most valuable aids in assisting to properly evaluate the significance of pain is the expression on the patient's face during the recital of his history and during the physical examination. The following case history and observations illustrate much of what I have said:

A married woman, 27 years of age, came complaining of stomach trouble, abdominal pain and nervousness. All three complaints had existed for the past two and one-half years. They had not been relieved by an appendectomy and a tonsillectomy. The patient is the only daughter in a family of four children. The father is a hard working, deeply religious, honest, stable person. The mother is likewise deeply religious, sympathetic, and very devoted to the only daughter. The patient was raised in a religious atmosphere and attended Sunday School and church regularly. She graduated from high school where she was a student of average

ability, shortly thereafter entering a business college for one year and became a stenographer, which occupation she followed for four years, when she was married. The marriage was not particularly pleasing to her parents but it suited her,—she was quite happy, well adjusted and progressed normally. She has been married five years, but has never been pregnant because of contraceptives. She is anxious for children but the husband does not feel that he can assume financial responsibility for their care. (He is not on the relief.)

In February, 1933, the patient had a rather sudden attack of generalized pain referred to the abdomen, associated with frequent stools, cramping, frequency of urination, considerable nausea but no vomiting. There was no fever, no elevation of the leucocyte count, no increase in pulse rate. She was seen by a physician (the result of his examination I do not know); however, he made a diagnosis of appendicitis and advised immediate operation. It was reported to the patient by the surgeon that the appendix was found to be in a knotted condition with the intestines all around it. There was no drainage. Ten days after leaving the hospital the incision became infected (apparently a skin infection) which required two months for healing. While in the hospital, four days after the operation, she had a similar attack to the one which provoked the appendectomy. Since leaving the hospital she has continued to have periods of abdominal pain, nausea, vomiting, diarrhea, and is generally miserable. Since 1933 she has seen many physicians, has had numerous X-rays, has had many diets, yet no one up to the present time has given her relief. She passes considerable mucus in her stools but no blood. The stools are small in volume, usually fairly well formed. The abdominal pain, as a general rule, is over the entire abdomen. Occasionally it is most severe in the upper right quadrant, frequently in the lower, which runs through to her back. It usually begins in the afternoon or evening and seldom prevents sleep. Within the past two and one-half months all of her symptoms are greatly exaggerated. She worries constantly, cries about half of the time and is a semi-invalid. She is unable to do her housework, and she wonders what on earth can be the cause of such excrutiating pain. She has been operated on, she has been dietarily regulated, she has taken bushels of medicine, her suffering gets worse, and she wants to know the worst that is the matter and if there is any possibility of getting well.

The physical examination revealed a well-developed, well-nourished, over-weight woman, 5 feet, 4 inches tall, weighing 183 pounds. She is anxious, apprehensive, emotionally unstable, fearful, crying frequently during the history and during the examination. Her co-operation was the best that she could give. The general examination revealed very little except a well-healed surgical appendectomy scar in the lower right abdominal quadrant. The abdominal wall was diffusely sensitive to light and deep palpation but relaxed well when the attention was otherwise engaged. There was no localized tenderness. The various intra-abdominal organs could not be palpated. Proctoscopic and sigmoidoscopic examinations revealed nothing of importance. A careful study of the stools on many occasions showed only an increase in the amount of mucus. An X-ray of the gastro-intestinal tract revealed a spastic colon involving the descending and sigmoid portions. The blood and other examinations gave no information as to her trouble.

We have, then, for consideration a patient who is suffering a great deal of pain and misery, who has tried surgery, who has tried diet and drugs, but who has steadily and progressively grown worse. What is the cause of her pain? Years ago she would have been told that her pain was imaginary, that she should go about her business and forget it, that she should get interested in something and have something to do. When this woman and her complaints are carefully scrutinized we find the following: She was raised very strictly in a religious environment; she has very decided ideas of right and wrong; she is kind and sympathetic but has little patience with many of the modern forms of amusement such as card playing, dancing, and social drinking—the last, in her mind, "the greatest curse of the age." She wants children, but hasn't any. At the onset of the illness which precipitated surgical intervention, her husband, for the first time in their married life, came home late to his dinner, which the wife had prepared with a great deal of care. When he did not arrive on time she became a little apprehensive, since he had always been accustomed to coming home a short while before the usual dinner hour. When he did arrive some hour and a half later, he had been in the company of convivial friends and had lingered to worship at the

shrine of Bacchus, pouring two or three libations into his alimentary canal to properly honor this god. Upon reaching home he was jovial, kind, loving, sympathetic, and not at all remorseful for having partaken of the "damnable, home-wrecking, degrading stuff." This attitude of the husband caused a tremendous psychic trauma to the wife, who had been raised in such a religious, God-fearing atmosphere. She saw immediately the complete destruction of all of her ideals, her home, her home life, and the gates of hell at that moment were thrown open to receive those who so transgressed (her husband included). With these thoughts she wrestled during the night, causing a tremendous emotional upheaval. She was unable to get out of bed the next morning. Very soon there appeared nausea, abdominal pain, diarrhea, and loss of appetite, and shortly thereafter she lost her appendix. The second attack of abdominal pain occurred on the fourth day after her operation,—it was again coincident with the fancied detection of the odor of alcohol on her husband's breath. The patient being a person of pride, and there having been some opposition on the part of her parents to her marriage, she has never discussed with them the rare and not flagrant departure of her husband from the straight and narrow path.

To make a long story short, with the adjustment of the situation, explaining the whys and wherefores to both parties concerned, and with the promise on the part of the husband to refrain from further alcoholic beverages, the patient is quite well, happy, has no pain, takes no medicine and follows no dietary restrictions other than those necessary to reduce her weight.

The recital of the pain and misery endured by this patient for a period of two and one-half years illustrates many of the problems constantly arising in the proper evaluation of the symptom of pain. In order not to be misled the ingenuity, the clinical acumen and the versatility of the physician are frequently taxed to their utmost. There isn't any simple, easy method of solving these problems. If the psycho-biological pattern of the sufferer is known, if the emotional reaction to the stress and strain of life is understood, if abnormal physiological reactions, the result of hypersensitivity of the autonomic nervous system, are appreciated, and then the patient subjected to a most careful and complete physical examination, numerous useless, expensive, exhibitionistic types of therapeutic procedures will be discarded, not by the enthusiast, but by the careful physician who thinks well of the patient as a whole before he advises action.

1010 Medical Arts Building.

THE ERYTHROCYTE AND ITS RELATION TO BLOOD PRESSURE.*

H. McGUIRE DOLES, M. D.,
Norfolk, Va.

Certain experiments conducted in my laboratory during the past ten months induced me to place these observations on record. This preliminary report deals with the study of one hundred and forty cases in which ten were normal, one hundred and twenty-five were hypertensions, and five were hypotensions.

Abnormal blood pressure has always been and is today a serious problem. Should the hypertension be associated with definite pathological findings the condemned organ or organs become the center of attack, in an attempt to restore the pressure to normal. However, we so frequently see a hypertension varying from an increase of a few to two hundred and fifty millimeters of mercury, but no definite etiology can be demonstrated after the most careful clinical and pathological examinations. To this obscure type of blood pressure we have applied the name "essential hypertension." In this group the kidney is frequently indicted, although no single or group of laboratory findings condemn it in any manner whatever. Should the kidney be so fortunate to escape the indictment, the diagnosis of arteriosclerosis is often made, yet the most painstaking examination reveals no definite arterial changes that can be actually demonstrated. Hypotension not associated with myocardial damages, blood loss, or shock has also presented its problem, although it does not carry the mortality or morbidity rate of hypertension.

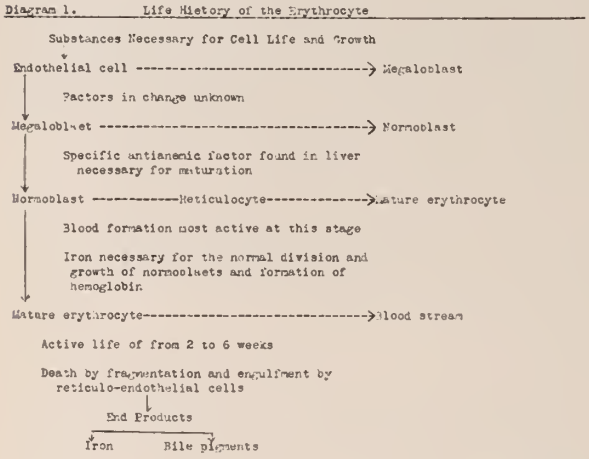
Russell Haden, Osgood, Wintrobe and Miller in

*Submitted for Publication, October 23, 1935.

this country, Bonninger, of Germany, Csaki, of Hungary and Bie and Moller, of Norway, determined that the accurate measurements of the red blood cells could be made in cubic microns. The study of the red blood cells in health and disease by Price Jones stimulated much research work in this field.

We must first familiarize ourselves with the origin, life and the end-products of the red blood cell before a comprenhensive study of this subject can be made. Normally the red blood cells are formed at the rate of six million to one trillion per day, and in the normal individual there are about twenty-five trillion red cells. The four most important chemical products that make up the red blood cells are iron, water, carbohydrates and proteins. The others need not be discussed at this time. The erythrocyte develops as shown by Haden, Sabin, and Witt, from the endothelial cells of the capillary of the red bone marrow. The stage of formation is shown in diagram 1.

Diagram 1. Life History of the Erythrocyte



(Haden)

Since cell division occurs in the marrow at all stages and is most active at the normoblast level, each circulating erythrocyte is not derived from a single endothelial cell. Sabin states that 99 per cent of cells of normal marrow are erythroblasts and normoblasts. Very few megaloblasts are found, although active division occurs at this stage. The megaloblast and normoblast stages are the two important periods in cell development. After reaching maturity in the marrow, all but a few lose their nucleus and vital staining granules. They are then fed into the blood stream as normal erythrocytes.

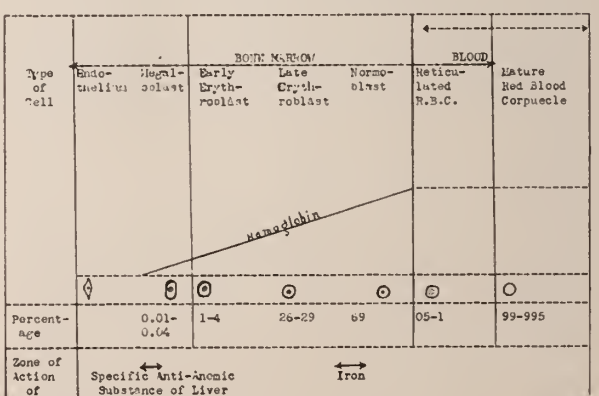
The specific anti-anemic factor found in liver necessary for maturation occurs between the megaloblast and normoblast stages, while the iron necessary for division and growth of the normoblasts and formation of hemoglobin is taken up at the normoblast stage. The mature erythrocyte after entering the blood stream has an active life from two to six weeks. After fulfilling their function these cells undergo fragmentation. The fragments are normally taken up by the reticulo-endothelial cells and dissolved in the spleen. The hemoglobin sets free, and is broken into hematin and globin. The hematin is changed into bile pigments after the iron has been split off. The iron is stored up and used again and again.

A mature, healthy erythrocyte contains a normal amount of hemoglobin and is normal in measurements. But under certain conditions this cell varies materially in its size and hemoglobin content. Therefore we have the following types of cells;

1. Normocytic and normochromic: volume index normal, color index normal.
2. Normocytic and hypochromic: volume index normal, color index low.
3. Macrocytic and hyperchromic: volume index increased, color index increased.
4. Macrocytic and normochromic: volume index increased, color index normal.
5. Macrocytic and hypochromic: volume index increased, color index low.
6. Microcytic and hypochromic: volume index low, color index low. (Haden).

The two critical points in cell maturation are shown in the following diagram:

Critical Points in Maturation



Embryologic cycle of the red cell of man (after Sabin) and the point of action of the specific principles necessary for normal red cell formation.

As previously stated the red cells can now be definitely measured in cubic microns by volume index. The normal cubic measurement is 1, and cells measuring more than 1 and less than .9 are definitely abnormal cells.

TECHNIC OF DETERMINATION OF THE RELATIVE CELL MASS

Run 2 c.c. of 1.4 per cent solution of sodium oxalate into a graduated 12 c.c. or 15 c.c. centrifuge tube with a syringe. Withdraw 20 c.c. of blood from an arm vein with a syringe. Transfer exactly 10 c.c. to the centrifuge tube containing the sodium oxalate solution and mix by inverting. Centrifuge for one hour at 2500 r.p.m. in a large centrifuge. Read the volume of cells. The blood of normal young men yields about 46 c.c. of cells and of young women about 41 c.c. To the other 10 c.c. of blood add one drop of a saturated solution of potassium oxalate and mix. This specimen is used for a red cell count and for hemoglobin determination, and blood chemistry.

ILLUSTRATIVE CALCULATIONS

On centrifuging 10 c.c. of blood mixed with 2 c.c. of 1.4 per cent sodium oxalate at 2500 r.p.m. for one hour, 4.5 c.c. of packed corpuscles are obtained. A normal blood with a count of five million yields 4.6 c.c. when similarly centrifuged. The volume percentage of normal of the packed cells of the unknown blood is 98.

The cell count of the unknown blood is 4,900,000.

The average individual cell volume is

$$\frac{45.0\times10^{12}}{4.90\times10^{11}} \text{ equals 92.0 cubic microns}$$

The volume index is

$$\frac{\frac{4.5}{4.6}}{\frac{4.90}{5.00}} \text{ equals 1.00}$$

(Haden)

Here I would like to emphasize the care in the red count as this is the most important part in the procedure. It has been my observation, also a number of others, that many grave errors occur in making the red count. The following procedure has been adopted in my laboratory. Three pipettes are filled in the usual manner. With the original Neubauer ruling, count the four corner groups of 25 small squares. With the improved Neubauer ruling count the four corner groups of 16 squares and one center group. In making the counts include all corpuscles touching the lines on the top and one adjacent side of each square and not those touching the bottom and other side. There must not be a difference of over 150,000 cells in each of the six counts.

APPLICATION OF THE NUMBER AND SIZE OF THE ERYTHROCYTES TO BLOOD PRESSURE

Applying the Achimides law (a body emersed in a liquid displaces its square surface of body measurements), it must be assumed that the red blood cells likewise exert a similar action on the plasma.

In order that a satisfactory standard pressure could be obtained for a working basis, I have used the normal standard as adopted by the insurance companies of America as follows:

Age	*Systolic Pressure*
15 and under	111
15 to 20	117
20 to 25	122
25 to 30	125
30 to 40	128
40 to 50	130
50 to 60	132
60 to 70	135
70 to 80	138

From this and volume index I devised the following formula:

Normal pressure x by percentage of increase of cell size obtained by volume index gives the actual systolic pressure providing there is no anemia. If anemia is present the following formula has been adopted:

Divide the actual number of red cells counted by the normal (5,000,000);

Subtract the percentage of red cells from 100 and that will give percentage of red cell loss.

Multiply the normal blood pressure by 46. If a female, 41.

This product multiplied by percentage of cell loss, subtracted from the increase in pressure obtained by multiplying the normal by the percentage of cell enlargement gives the actual pressure. Male 25 years of age—hemocrit reading 50—red cells 4,000,000—normal systolic pressure 122.

$$\frac{\frac{50}{46}}{\frac{400}{500}} \text{ equals volume index of 1.39}$$

The cells are increased 39 per cent in size.

122x39 equals 47.58

122 plus 47.58 equals 169.58

46 represents the percentage of solid (red cells) within the blood vessels; assuming that plasma is

normal in amount the deduction will have to be in cell loss. Therefore 46x122 equals 56 or pressure exerted by cell normally. This patient had only four million red cells, thus 4,000,000 divided by 5,000,000 equals 80 per cent or a loss of 20 per cent. 20 per cent of 56 equals 11.2 and 169.5 minus 11.2 equals 158.38 patient's actual systolic blood pressure.

During the past ten months one hundred and twenty-five cases of hypertension, ten cases with normal blood pressures in young, healthy adults, and five cases of hypotension have been checked by this method. In order that any source of error could be found in this method of determining blood pressure, twenty-five cases, with normal and abnormal pressures were taken by some other physician using a standard mercury manometer. My only contact with the patient was to obtain 20 c.c. of blood. In every instance the blood findings checked with the blood pressure instrument findings and the error was less than 3 per cent. I may say that each patient was put at rest fifteen minutes before the pressure was taken with the instrument.

One hundred and forty cases have been studied in my laboratory, and with the exception of three cases that showed marked kidney damage, the pressure findings did not vary over the point previously described. After definitely proving that blood pressure could be determined by the blood findings and that hypertension was the result of a macrocytosis of the red cells and that hypotension was either a microcytosis or a loss in actual number in red blood cells, an attempt was made to find the cause of the variation in the cell size. The iron content of the whole blood, the plasma, and urine reveal some very interesting facts.

The new method of Wong adopted by Haden in the study of the hemoglobin content and total blood iron, was used in my investigation. The iron content of the whole blood, plasma and urine were done in sixty cases. In order that an accurate check could be made on the iron standard five normals with a five million red count, and with a hemoglobin of approximately 100 were first checked. The results ran practically the same as those of Carl Reich and Haden. The hemoglobin content figured from the iron findings was likewise normal. The results of these findings can be found in charts 1 and 2.

It may be stated, however, that the hypertension cases showed a marked increase in iron in the blood cells. Those cases showing albumin in the urine likewise showed an iron content varying from nine milligrams to as much as 12.5 mlg. per 100 c.c. Another interesting factor was that, as the iron was reduced in the red blood cell, the plasma iron was also reduced with a disappearance of the iron from the urine. All cases that showed iron free urine were likewise free of albumin. Therefore it would seem logical to conclude that a treatment of hypertension case must be directed at the iron content of the blood and plasma also, to reduce the size of the red blood cell. With this point in view twenty-six cases have been treated.

The normal intake a day for the average individual is 35 mlg. The total iron content of the foods received by these twenty-six cases was 15 mlg. Those in which an anemia of any degree was present were not permitted to have leafy vegetables, but were put on a diet that was rich in proteins, namely, beef and liver. Those that showed a slight amount of anemia were reduced to 50 mlg. of proteins per day in order that a more liberal supply of vegetables could be used and also fats. In the meantime the iron content was kept within the 15 mlg. limit, with the exception of two cases which will be discussed later in this paper.

Case No. 1.—Hypotension responded to large doses of iron.

Case No. 3.—Blood pressure returned to normal after four weeks with a negative albumin. However, he went on a vacation for a month and during the time did not follow the diet at all. On returning his blood pressure was practically the same as it was before treatment was started. His urine through this time remained clear. During the past two weeks he has been on his diet and his pressure is now 138.

Case No. 4.—Was an essential hypertension with marked headaches and anginal pain on walking. At present she is symptom free, although her pressure is somewhat elevated.

Case No. 18.—Responded to a diet of 15 mlg. of iron with a pressure drop to 140. The diet was increased 19 mlg. and her pressure again returned to 171. She has shown no change to date.

Case No. 19.—Was discharged from the Navy on account of a severe hypertension, severe headaches, dizziness, and anginal pain on any moderate

No. I—BEFORE TREATMENT

C.N.	S.	R.	A.	Albu.	R.B.C.	Hg.	B.I.	P.I.	U.I.	N.P.N.	Ctn.	V.I.	B.P.I.	B.P.V.I.	Duration
1	F	W	27	Neg.	444	80	42.1	10.4	Neg.	.....	.....	.9	110	109	D. K.
2	F	W	55	Neg.	390	90	60.9	15.2	Neg.	.....	.....	1.54	190	189	5 yrs.
3	M	W	78	++++	420	100	59.7	21.3	15.5	.....	.....	1.35	174	174	10 "
4	F	W	63	Neg.	382	110	67.2	14.6	Neg.	.....	.....	1.69	222	217	4 "
5	F	W	68	Neg.	338	95	62.5	15.5	Neg.	.....	.....	1.50	195	195	5 "
6	M	W	69	Neg.	420	98	65.5	16.4	Neg.	.....	.....	1.30	168	166	4 "
7	F	W	49	Neg.	416	107	56.6	15.6	Neg.	.....	.....	1.39	172	171	2 "
8	M	W	44	Neg.	451	100	59.2	12.3	Neg.	.....	.....	1.15	144	144	5 "
9	F	W	73	Neg.	406	95	60.2	13.4	Neg.	.....	.....	1.30	170	169	6 "
10	F	W	59	Neg.	375	90	57.7	17.2	Neg.	.....	.....	1.45	184	181	6 "
11	M	W	50	Neg.	398	100	60.8	18.7	Neg.	.....	.....	1.30	165	163	8 "
12	M	W	64	Neg.	300	85	57.8	15.9	Neg.	.....	.....	1.55	190	186	8 "
13	F	W	63	+++	319	90	55.7	17.5	12.5	58.6	1.7	1.40	170	169	4 "
14	M	W	78	+	431	108	60.1	16.2	.85	38.7	1.6	1.39	184	183	5 "
15	F	W	70	Neg.	406	90	57.5	15.2	Neg.	30.7	1.2	1.30	172	171	6 "
16	F	W	65	Neg.	375	90	53.2	11.3	Neg.	31.3	1.4	1.45	185	181	4 "
17	F	W	43	Neg.	421	100	52.5	11.2	Neg.	.....	.....	1.27	155	155	3 "
18	F	W	61	Neg.	405	105	59.5	17.9	Neg.	30.5	1.1	1.35	172	171	8 "
19	M	W	44	++++	351	102	81.4	25.6	18.9	50.4	1.4	1.81	258	217	4 "
20	F	W	60	Neg.	409	94	53.5	13.9	Neg.	30	9.5	1.24	160	158	6 "
21	M	W	29	++++	240	88	99.9	27.2	19.4	187.6	.....	1.8	203	199	4 "
22	F	W	65	+	390	100	68.7	17.9	11.1	.....	.....	1.62	210	207	5 "
23	F	W	59	Neg.	400	95	54.5	15.6	Neg.	.....	.....	1.28	165	162	6 "
24	M	W	62	Neg.	340	85	53.6	15.5	Neg.	.....	.....	1.31	160	158	3 "
25	M	W	27	Neg.	340	70	39.9	9.7	Neg.	30.2	1.5	1	110	109	5 wks.
26	M	W	22	Neg.	500	100	47.7	11.2	Neg.	31.4	1.3	1	120	120	Normal
27	M	W	48	Neg.	328	90	.....	.....	.....	.....	.....	1.52	186	182	8 yrs.
28	F	C	17	++++	249	72	57.7	25.5	16.7	19.5	.....	1.59	162	162	Eclampsia
29	F	W	52	++	380	90	57.3	15.4	11.3	35.5	1.5	1.39	170	170	5 yrs.

Abbreviations:.

C.N...Case number.
S.....Sex.
R....Race.
A.....Age.
Albu..Albumin in urine.
R.B.C...Red blood count.
Hg.....Hemoglobin.
B.I.....Total blood iron ml. per 100 cc.
P.I.....Total plasma iron ml. per 100 cc.
U.I.....Total urine iron ml. per 100 cc.
N.P.N....Non protein nitrogen.
Ctn.....Creatinin.
V.I.....Volume index.
B.P.I.....Blood pressure by instrument.
B.P.V.I...Blood pressure by volume index.

No. II—AFTER TREATMENT

C.N.	Albu.	R.B.C.	Hg.	B.I.	P.I.	U.I.	N.P.N.	Ctn.	V.I.	B.P.I	B.P.V.I.	Duration
1	Neg.	490	98	49.3	10.1	Neg.	.....	.....	1	122	122	3 wks.
2	Neg.	400	80	51.3	12.3	Neg.	.....	.....	1.10	135	133	4 "
3	Neg.	460	95	50.1	13.4	Neg.	.....	.....	1.04	140	138	3 "
4	Neg.	341	78	68.9	12.7	Neg.	.....	.....	1.30	160	158	5 "
5	Neg.	400	85	48.5	15.5	Neg.	.....	.....	1.15	140	139	4 "
6	Neg.	435	90	49.9	11.1	Neg.	.....	.....	1.05	138	136	4 "
7	Neg.	470	98	47.2	11.9	Neg.	.....	.....	1.05	135	135	3 "
8	Neg.	480	100	47.6	10.9	Neg.	.....	.....	1	130	130	3 "
9	Neg.	490	98	49.8	13.9	Neg.	.....	.....	1	139	137	3 "
10	Neg.	476	95	47.1	14.7	Neg.	.....	.....	1	130	130	4 "
11	Neg.	460	94	52.7	15	Neg.	.....	.....	1.06	134	133	4 "
12	Neg.	351	80	47.4	13.2	Neg.	.....	.....	1.12	135	133	4 "
13	Neg.	409	85	61.4	10.3	Neg.	.....	.....	1.16	148	148	4 "
14	Neg.	455	96	51.9	13.7	Neg.	.....	.....	1.08	140	138	2 "
15	Neg.	440	90	49.9	12.2	Neg.	.....	.....	1.09	138	138	4 "
16	Neg.	420	86	43.3	13.7	Neg.	.....	.....	1.10	138	138	3 "
17	Neg.	450	92	46.7	12.8	Neg.	.....	.....	1	130	130	4 "
18	Neg.	405	105	61.4	13.3	Neg.	30.5	1.1	1.35	171	171	4 "
19	Neg.	420	95	57.2	11.2	Neg.	.....	.....	1.3	160	160	3 "
20	Neg.	429	90	52.2	11.3	Neg.	.....	.....	1.10	140	140	4 "
21	.....	250	40	33.5	15.2	9.6	38.9	1.5	1.	150	100	4 "
22	Neg.	400	85	51.7	11.3	Neg.	.....	.....	1.25	160	158	3 "
23	Neg.	439	98	49.8	12.5	Neg.	.....	.....	1.10	136	136	5 "
24	Neg.	386	76	42.6	12.2	Neg.	.....	.....	1	134	134	5 "
25	Neg.	465	95	47.3	12.7	Neg.	.....	.....	1	120	120	4 "
26						Normal	Case					
27						Not Tre	ated					
28	++	400	80	42.6	10.2	Neg.	.....	.....	1.07	117	117	2 "
29	Neg.	469	92	50	11.4	Neg.	.....	.....	1	130	130	3 "

exertion and was practically bedridden. His urine is now normal and he has no symptoms whatever, but his pressure is still above normal.

Case No. 21.—Entered the hospital as an extremist with severe headaches, totally blind from hemorrhages and choked discs, some heart pain, and vomiting continuously. Although this patient is still in bed and still shows albumin he is symptom free and gaining every day. You will note that the cell size was originally 1.6 and the iron index was 99.9. By reducing the iron in his diet and feeding him large amounts of proteins with a maximum intake of 15 mlg. per day his cell size has dropped to .9 microns. There is still a difference

between the actual pressure and volumetric pressure, which is undoubtedly the result of the severe kidney damage that he sustained.

Case No. 27.—Has recently had a suprarenal denervation for his hypertension with a fall in pressure of about twenty points. But after the most exhaustive treatment his pressure could not be reduced lower than the present findings. The volume index measures his pressure actually the same as on the instrument. This patient was from one of the larger cities and had to return immediately and there was no opportunity to observe him further.

Case No. 28.—Was a young girl with an eclampsia. Although she did not have convulsions she was markedly edematous, with large amounts of albumin, without pus in the urine, but many hyaline and granular casts. After the delivery her pressure and urine out-put were unchanged for ten days. She was placed on a diet rich in proteins containing 15 mlg. of iron and in two weeks left the hospital with a normal pressure, no evidence of edema, and probably the albumin in the urine at the time of discharge was due to the twenty or thirty pus cells per high powered field, as no casts could be demonstrated. She had made an uneventful recovery.

Case No. 25.—Is a hypotension resulting from hemorrhage. This patient bled profusely from a duodenal ulcer some two weeks before he came under my observation. At the time of examination his red blood count was 3,400,000 cells.

Case No. 29.—Was admitted to the hospital markedly edematous, dyspneic, large amount of fluid in abdomen, edema of the lungs, and all signs of myocardial failure. Her blood pressure on admission by instrument was 110 over 90. The volume index pressure 170. Her chart in the outpatient's department made some months before the cardiac symptoms developed showed her pressure to be 170 over 110 on each admission. This patient's pressure is now 130 over 70; there is no edema, no respiratory distress, the heart is normal and she was discharged with a red count of 4,690,000, a normal volume index also a normal urine and an iron content within satisfactory limits.

CONCLUSIONS

1. An accurate determination of the systolic blood pressure can be made by the blood findings as described.

2. The iron determinations point to the belief that cell enlargement in hypertension is due to an increased iron content of the red blood cells.

3. Hypotension uncomplicated by cardiac impairment is the result of the loss of red blood cells through anemia or a microcytosis. If the microcytosis is present it is due to a lack of iron content. Therefore hypotension may be the result of an anemia with or without microcytosis or microcytosis without an anemia or the two combined.

4. Iron is a factor in kidney damage as has been shown by the total blood iron, urine, and plasma iron determination, and albumin in the urine varied with the iron content of the urine.

5. Blood pressure in cases of severe nephritis will vary from the actual blood pressure obtained by the blood findings, but a definite determination of the pressure produced in kidney damage can be estimated by subtracting the actual pressure by blood findings from the instrument pressure.

6. The treated cases in which results were obtained showed an increase in the red cells, a decrease in the cell size, in hemoglobin, in iron content of the cells, plasma and urine with a corresponding fall in systolic and diastolic blood pressure.

REMARKS

Two types of hypertension have been described: one the result of a macrocytosis and hyperchromia, and the other the result of nephritis associated with macrocytosis and hyperchromia.

All cases reported with the exception of three received marked benefits by reducing the size of the red blood cell. The two nephritic cases still have some elevation of pressure; one uncomplicated case has failed to respond to treatment.

One case has been reported in which a denervation was done in an attempt to reduce his pressure. True there was a loss of about 20 points of blood pressure; however, the method used in determining blood pressure in this series of cases gave an accurate measurement. It may be stated that this man had some anemia which probably was the result of the reduction in pressure as well as the denervation. Although I do not know the red blood picture at the time of operation, it is safe to assume that it was greater at that date than at the time I saw him.

It is not the object of this report to convey the idea that arteriosclerosis and nephritis do not play

a part in hypertension. It is to bring to your attention the fact that the enlargement of the red blood cells is the one most common cause, a factor heretofore never considered.

There is much to be learned in the treatment of these cases. The two essential points are, first, to reduce the red cells to normal size, and, second, to increase the number of red cells if an anemia of any degree is present. The diet will have to be changed from time to time in all probability, and yet some other factor, unknown at present, may be found that will influence the red cells. Liver may play its part. Certain observations with this are now being conducted. It is my hope and belief that when the final paper on this is published, it will give a more logical and satisfactory method of treatment.

Before closing, I wish to emphasize that no case of hypertension should be treated in the manner described until an accurate survey or the number of red cells, the iron content, the plasma and urine iron and the size of the cell has been obtained. Failure to carry out this procedure before treatment is instituted would be as illogical as prescribing insulin for a diabetic before obtaining the content of the sugar in the urine and blood.

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ROENTGEN DIAGNOSIS OF PNEUMOPERITONEUM—WITH REPORT OF A CASE OF RUPTURED DUODENAL ULCER WITH SPONTANEOUS RECOVERY

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When a roentgen examination shows positive signs of a perforation somewhere in the gastro-intestinal tract in an acutely ill patient there can be no doubt as to the advisability of immediate operation. We are here reporting, however, a case of perforated peptic ulcer, discovered several days after the rupture had occurred, in which the patient made complete recovery without operation.

Our patient, H. R., was a white male, age 40, with a history suggestive of peptic ulcer extending over a period of twenty-six years.

On September 14, 1933, he suffered an acute attack of pain in the upper abdomen. He states that the onset was sudden and that he was unable to get a deep breath because breathing increased the pain. There was no vomiting. His family physician relieved him with morphia, and requested a roentgen examination of his gall-bladder. At the time, the patient was at his home in the country and, since he was much better the following day, he postponed the request for the examination until the morning of September 17, 1933, three days later. At this time he was comparatively free from pain, his temperature and pulse were normal and he stated that he felt quite well except for the soreness in his upper right abdomen. His gall-bladder was examined, as requested, and since it was found to be normal, we asked him to return for an examination of his stomach and duodenum. This he did the following day, and during the fluoroscopic study air

was discovered between his diaphragm and liver. This was confirmed by a chest roentgenogram. At the same time a typical "bird-flying" type of ulcer defect was seen in his duodenum. From these findings it was obvious that the patient had suffered an acute perforation of a duodenal ulcer four days previously, but, since he was quite well clinically, no operation was performed and, following proper diet and medication, he is in good health today, about two years after the perforation occurred.

While this patient survived without an operation, it is generally conceded that to postpone surgery in the acute stages of a perforation anywhere in the gastro-intestinal tract is very likely to result in the death of the patient. The importance of immediate roentgen examination of patients suspected of having a perforation is therefore quite obvious. The procedure takes only a few minutes, as a good roentgenogram to include the diaphragm can be made at the bedside.

the roentgen diagnosis. But since it is better for air to escape into the peritoneal cavity rather than fluids or solid matter, and since ulcers usually occur on the lesser curvature of the stomach or doudenum, we believe that a peptic ulcer patient with suspected perforation should be kept constantly on his left side with a moderate elevation of the upper half of his body and that he should be kept as quiet as possible. In this position a diagnostic roentgenogram can easily be made at the bedside without moving the patient to the fluoroscopic room. Furthermore, in the detection of small quantities of gas in the peritoneal cavity films are more accurate than the fluoroscope.

Pneumoperitoneum can be detected radiographically in practically every case in which even a few c.c. of gas escape into the peritoneal cavity but one should not lose sight of the fact that perforation sometimes occurs with the escape of fluids or solid matter accompanied by little or no gas, and it

Fig. 1.—A. Roentgenogram of diaphragm. A and B, collections of gas in peritoneal cavity between diaphragm and liver on patient's right and between diaphragm and stomach on the left. C, gas bubble in stomach.

Vaughan and Singer[1] have called attention to the fact that it is unnecessary to place the patient in an erect posture, demonstrating clearly that the examination can be made with the patient lying on his left side. They recommend placing the patient on a stretcher in this position and rolling him behind a fluoroscopic screen. They also state that this latter position facilitates the escape of gas which aids in

should be remembered that gas is absorbed from the peritoneal cavity quite rapidly. Therefore, the failure to find a pneumoperitoneum does not exclude a perforation. Our experience up to this time leads us to believe that it can be found in approximately 80 per cent of the cases of acute perforation occurring in the gastro-intestinal tract, provided the roentgen examination is made within the first few hours.

In the case reported above no gas was present under the diaphragm forty-eight hours after it was first discovered there, but because gas was present for at least four days following the perforation we know that a large quantity escaped at the time of the rupture.

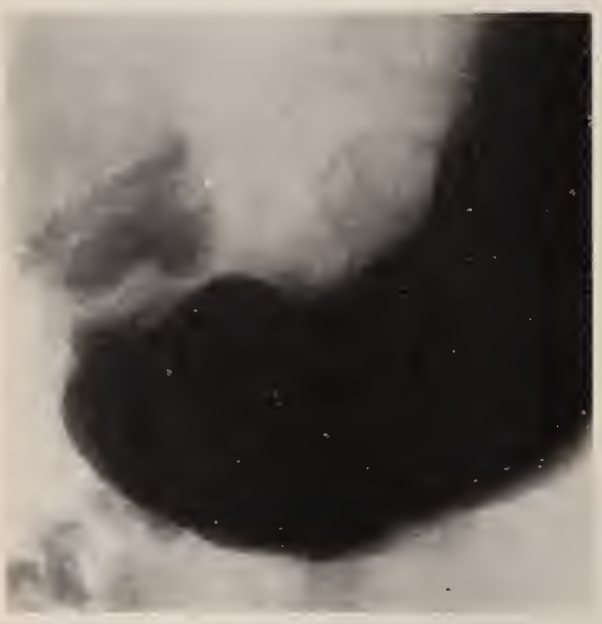

Fig. 1.—B. Roentgenogram of stomach and duodenum. The filling defect in duodenum was constant at the fluorscopic examination and upon the films.

Fortunately, a barium meal is not necessary in roentgen diagnosis of pneumoperitoneum. It would, of course, be indispensable if the exact location of the rupture was required, but this information is not absolutely essential, and barium should never be given until it is reasonably certain that the perforation has been sealed.

Synopsis: (1) A case with spontaneous recovery from a perforated peptic ulcer is reported. The diagnosis was made by roentgen examination four days after the perforation occurred.

(2) While this patient was fortunate enough to recover, roentgen examination followed by immediate operation is advocated in the early stages of cases suspected of having a perforation anywhere in the gastro-intestinal tract.

(3) In order to minimize, as far as practicable, the escape of fluid and solid matter, a patient suspected of having a perforated peptic ulcer should be kept constantly on his left side with the upper half of his body elevated.

(4) In the above position a roentgen diagnosis of pneumoperitoneum can be made with a portable machine without moving the patient, and by the roentgenogram smaller quantities of air can be detected than by the use of the fluoroscope.

(5) No barium should be given until it is reasonably certain that the perforation has been sealed.

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HEART-BLOCK—COMPLETE AURICULOVENTRICULAR DISSOCIATION AND INTRAVENTRICULAR BLOCK IN A CASE OF RHEUMATIC HEART DISEASE.*

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Heart-block in man was first recorded in 1875 by Galabin who described a case having a ventricular action of 25 to 30 beats per minute and obtained excellent curves showing the complete independence of contractions of the auricles and ventricles. In 1899, both Wenckebach and His described heart-block in man and suggested that it was caused by a lesion in the auriculoventricular bundle. Hay, in 1905, was the first to find post-mortem changes in the auriculoventricular bundle in a case of heart-block clearly recognized during life.

Any abnormal delay in the conduction of the impulse from the auricle to the ventricle through the specialized auriculoventricular conducting system constitutes heart-block. When the defective conduction is slight, it is shown by a prolonged A-C

*Read before the Richmond Academy of Medicine, April 9, 1935.

interval in the venous curve and a prolonged P-R interval in the electrocardiogram. Such a slight degree of block is the most frequent of all types, but such cases are usually not recognized unless graphic records are taken. When the grade of block is higher we get what is commonly called "dropped beats," that is, the intervals between the auricular and ventricular contractions gradually lengthen until the point that there is a failure of response of the ventricle to the auricular stimulus and the ventricle does not contract. This procedure may be repeated at regular or irregular intervals. When the ventricle more frequently fails to respond, a simple ratio between auricular and ventricular contractions may be established. The most common ratio is 2:1, but occasionally we find a 3:1 or 4:1 ratio, and the ratio may change from time to time in the same patient. Such above-mentioned types of heart-block are known as partial block. The final grade of block is reached when none of the impulses originating in the sinoauricular node pass through the junctional tissues, and hence the ventricle is not governed by them but takes up its own rate and rhythm from impulses arising in the junctional tissue. Such a grade of block is called complete heart-block, or complete auriculoventricular dissociation. Very rarely there may exist double types of block, and such a condition was found in the case I am going to report; that is, the impulse which arises in the junctional tissue and stimulates the ventricle to contraction is not conducted normally in the bundle branches, but is delayed in one of the other branches, and hence we get intraventricular block.

Etiology.—Auriculoventricular block may be caused by temporary toxic or functional conditions or by permanent organic disease, or a combination of the two. In the former class of causes are excessive vagal stimulation, asphyxia, digitalis and quinidine poisoning, and the temporary effects of certain diseases, such as rheumatic fever and diphtheria; in the latter class the most frequent cause is coronary disease; less frequent causes are syphilis, rheumatic fever, diphtheria, tuberculosis, tumors, and congenital heart-block.

Frequency.—In 9,000 cases presenting cardiac symptoms having electrocardiograms done at the Massachusetts General Hospital, 581 cases showed some degree of heart-block; but the block was complete in only seventy-six of these cases.

Sex.—The male sex shows permanent heart-block twice as often as does the female. The incidence of temporary block is equal in the two sexes.

Age.—Ninety per cent of the higher grades of permanent block occurs in patients over fifty years of age.

Prognosis.—Permanent heart-block, even the milder degrees such as "dropped beats," is always a serious manifestation, as it usually indicates a diffuse affection of the muscle and not merely a pathological condition of the bundle. Lewis states, "Most patients who present persistent heart-block die within a few years, whether it is of milder or severe grades, and whether syncope occurs or not."

Fig. 1.—Teleroentgenogram of chest showing congestion of the hiluses of the lungs and marked enlargement of the heart.

CASE REPORT

Mr. E. T. B., white, male, age twenty-four years, was perfectly well and able to carry on strenuous work until an attack of rheumatic fever eight and one-half months prior to the time I saw the patient in consultation. At the time of the rheumatic fever the patient was in bed about one week and had tachycardia, aching pains, and fever. He did not have acute joint symptoms, but several doctors who saw him stated that he had rheumatic fever. He

returned to work but had an attack of paroxysmal tachycardia lasting about twenty-four hours. Patient was unable to return to work again until about four months later. After working eight days he was walking down the street when he suddenly became unconscious. Dr. McLemore was called and stated that the patient's heart rate was normal. In the following three days the patient had several dizzy spells but no more unconscious spells. At the time of the first visit the patient complained of dyspnea on slight exertion, fatigue, sore throat and vague epigastric discomfort.

Past History.—This was essentially negative; no history of rheumatic fever, growing pains, chorea, tonsillitis, or diphtheria.

Physical examination revealed the following findings of interest: Tonsils, hypertrophied and chronically inflamed. Lungs: normal findings on auscultation and percussion. Heart: definitely but not greatly enlarged, the supracardiac dullness was 4 cm.; right border dullness in the fourth interspace was 4 cm.; left border dullness in the third interspace was 5 cm., and in the fifth interspace 11 cm. The maximum apex impulse was 10 cm. to the left of the midsternal line. Rhythm was regular and the ventricular rate was 37 per minute. There was no pulse deficit. Aortic second sound was split and louder than pulmonic second sound. Sounds at the apex were very distinct and divisions naturally accentuated due to slow rate. Distinct but somewhat muffled auricular sounds could be heard and were not associated with the usual first and second sounds. A varying late diastolic and presystolic lowpitched, distant, rumbling murmur was heard at the apex. No diastolic murmurs were heard at the base. Blood pressure was 114/76. After exercise the ventricular rate went up to 44 but soon returned to 37. There were no signs of congestive failure.

Teleroentgenographic and orthodiagraphic studies revealed a markedly enlarged heart, both right and left sides being enlarged, definitely enlarged left auricle, normal aorta, and definite hilus congestion.

Electrocardiogram showed complete auriculoventricular dissociation (auricular rate 94, ventricular rate 34); abnormal T waves and intraventricular block.

Laboratory reports revealed the following: negative blood Wassermann, normal blood count and differential; urinalysis, heavy trace of albumin, sugar negative, hyalin and coarsely granular casts.

Clinical Course.—Patient gradually became worse and it seemed that he was unable to get rid of his sore throat, sinusitis, and tonsillitis, which he developed a few weeks after visit here. He developed frank congestive failure and died approximately one year after the attack of rheumatic fever. No post-mortem examination was allowed.

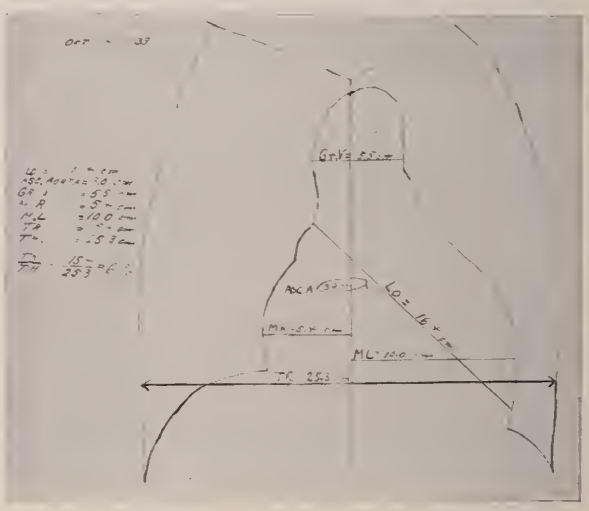

Fig. 2.—Orthodiagram showing marked enlargement of heart, the transverse diameter of the heart being 61 per cent of the internal thoracic diameter. The diameter of the ascending aorta is normal.

Treatment.—Since the patient was suffering from circulatory embarrassment which was thought to be connected, in part at least, with the slow ventricular rate, and since the slow ventricular rate did at times cause distinct uncomfortable symptoms, it was decided to start treatment to try to overcome the block. Thyroid extract, grains ½, three times per day, was first tried but this had no effect and was stopped at the end of one week. Barium chloride, grains ¾ after each meal, was then tried; this also failed. Ephedrine sulphate grains, ⅜, three times per day, was then started, and I saw the patient after about the third day of this medication, at which time the ventricular rate was around 55 to 60. It seemed that the increase in rate was due to frequent ventricular extrasystoles rather than to an improvement of the A-V conduction. By using ephedrine and varying the frequency of administration, we were able to keep the ventricular rate up to 60 to 80 throughout the remainder of the patient's life. The apical mitral murmur became most distinct when the heart rate kept around 60.

Remarks.—The case reported seems to be of interest because it demonstrates a number of unusual points. I believe that the patient did have rheumatic disease, although I realize that several other conditions have to be considered. I sent this case report up to Dr. Paul D. White, of Boston, and I should like to quote his opinion as gained from his letter: "I agree that the most likely cause of the final illness and death was a pancarditis involving the myocardium chiefly. Active rheumatic infection would best account for this. There are two or three other things, however, that must be considered, one of which would be diphtheria which would be superimposed on chronic or subacute rheumatism; a second possibility would be subacute bacterial endocarditis also superimposed, and a third would be an unusually early coronary involvement. However, your man evidentally did not have clinical symptoms indicating coronary thrombosis or embolism, subacute bacterial endocarditis or diphtheria. Therefore, an acute rheumatic pancarditis with the unusual complication of complete heart-block will best explain the case."

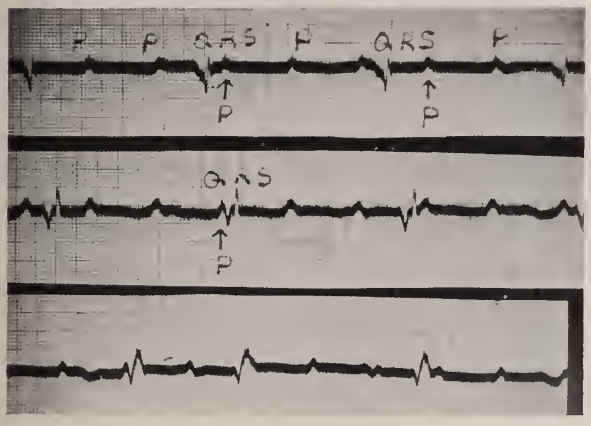

Fig. 3.—Electrocardiogram showing complete heart-block (complete auriculoventricular dissociation), auricular rate 94, ventricular rate 34; also intraventricular block and abnormal T waves. Note: P waves indicating auricular activity occur without relation to QRS waves of ventricular activity. QRS interval prolonged to .16 second, thus indicating intrapentricular block.

It seems that this patient had no symptoms of rheumatic infection until one year ago; however, we cannot be sure of this as rheumatic infections often occur without characteristic signs or symptoms; following the rheumatic fever the patient was never able to overcome his rheumatic infection. Complete permanent heart-block in a patient at the age of 24 suffering from rheumatic heart disease is very rare; this patient also had intraventricular block tending to true bundle branch block, and this combination is extremely rare. Clinically, the auricular contractions could be definitely heard occurring between ventricular contractions and when the auricular contractions occurred just prior to ventricular contractions, there was a definite presystolic or late diastolic murmur. This sign, when taken into consideration with other factors in this case, makes the diagnosis of mitral stenosis resonably sure. Thyroid extract and barium chloride had no effect on the ventricular rate. Atropine did not have any effect on the block, and a single subcutaneous injection of adrenalin seemed to be without effect on the ventricular rate, these observations being checked by electrocardiograms. Ephedrine sulphate was effective in increasing and maintaining an increase in ventricular rate apparently through the excitation of frequent ventricular extrasystoles.

Note: I wish to express my sincere appreciation to Dr. W. T. McLemore, of Courtland, Va., who kindly referred this interesting case to me and thoroughly cooperated with me in the handling of this case.

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Professional Building.

THE ACUTE ABDOMEN.*

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Before entering upon the subject matter of my discussion, I wish first of all to thank you for the honor and the privilege of taking part in your programme. Secondly, I fear that I am not able to tell you anything that you do not already know, but I hope, at the same time, that my viewpoint, in any differences it may show from yours, may be of some value.

There is no other condition in medicine that requires greater diagnostic acumen or wisdom in judgment than "the acute abdomen." While this is a general term I use it as referred to acute appendicitis, cholecystitis, pancreatitis, diverticulitis, rupture of stomach or intestines, rupture of spleen or liver, rupture of urinary bladder, intestinal obstruction, acute pelvic inflammatory disease, twisted ovarian cyst, torsion of omentum or ruptured ectopic gestation. While all of these conditions deal with definite organs complicated by either infection or hemorrhage, they are, however, all intimately related to the peritoneum. All of the above conditions usually manifest themselves ultimately as peritonitis, at times as abscess, and these are the pathologic results and the causes of death.

This group of conditions termed under the poor term, "acute abdomen," present a problem for early and correct diagnosis as the time interval between diagnosis and treatment is an important factor in the patient's recovery.

From the standpoint of aids in making diagnosis there are several factors which are highly important. First of all, there must be an appreciation by the physician of the seriousness of the patient's condition from observation when the patient is first seen. A great amount of information may be gathered at that time purely by getting an impression of the patient's general appearance. For example, is the patient in pain, has the patient a pinched, drawn expression about the face, is the patient in shock, etc. This first impression will help tremendously in guiding you to a proper diagnosis inasmuch as it makes you realize the seriousness of the patient's condition. Accepting the fact that the patient is in pain and is shocked, we must then realize that after all these are secondary to some primary condition.

We are then in a position of a Sherlock Holmes, something has happened and we are to find out what caused it to happen. We lay our plans, and the first thing is a carefully taken history of the *subjective findings* (symptoms) of the patient at hand. The importance of this investigation cannot be stressed too much. If we consider subjective pain we must find out whether the pain is localized, whether or not it radiates, is it stab-like or is it cramping, does it come intermittently or is it constant, has it been getting worse or is it subsiding. This is just an example of one symptom and how it must be thoroughly investigated. All symptoms or subjective findings must be studied in the same manner.

Objective findings are next appraised. The most important of these is tenderness which is pain caused by applied pressure. Is this tenderness localized in one area or is it generalized. What is the geographical location of the tenderness.

Tenderness can be a real clue. If over the upper right quadrant perhaps it means cholecystitis; over the lower right quadrant appendicitis. Generalized abdominal tenderness means a peritonitis. Thus, as we investigate further, the picture becomes clearer.

Rigidity is another important feature. By rigidity I mean the ability of the muscular wall of the abdomen to contract and form a protective wall for the irritated or infected peritoneum lying beneath it.

Thus we have investigated the three cardinal features of the Acute Abdomen. Pain, tenderness, and abdominal rigidity. This is done, as seen, by studying the previous history, the symptoms experienced by the patient, and the physical signs brought to light by the physician. There is one more weapon in our armamentarium for aid in diagnosis and that is the laboratory. This can be used or abused. I am afraid a number of the older physicians use this

*Read before the Medical Society of Northern Virginia, November, 1934.

aid too little while the young physicians depend too much on it. There has been a great tendency in recent years for men to get into the rut of depending almost solely on laboratory findings to make a diagnosis. If this tendency should persist the medical profession is due for a set-back. I recall seeing a case in consultation with a doctor not long ago which brings out the so-called laboratory type. The patient had been under observation of this physician for three weeks. The symptoms were low back pain, loss of weight. Every known test in the chemical laboratory had been done and no diagnosis reached. On pulling the covers down for inspection of the body, a tumor the size of an orange was presented in the left groin, proving to be a sarcoma with retroperitoneal involvement. This is one example, to show how, by disregarding the five senses and depending on laboratory findings, one may become confused. I should think that 90 per cent of the diagnoses of "the acute abdomen" can be made by a careful history (symptoms) and physical findings.

The laboratory has, however, a very important place as an aid in diagnosing this small group of cases which are still confusing after a careful history has been taken and a careful physical examination done. This is true in the diagnosis of an early jaundice by icterus index and may help us in the diagnosis of a common duct obstruction due to stone, or pancreatitis or carcinoma of the head of the pancreas. A urine helps in the differentiation between a stone in the right ureter or kidney and acute appendicitis. A number of other laboratory tests are important in regards to differential diagnosis. The laboratory also has its place as an aid in the pre-operative and post-operative treatment of this group of cases, as I will discuss later. I cannot emphasize too strongly, then, the importance of three factors in the diagnosis of the Acute Abdomen. They are the careful history of pain, a painstaking examination for tenderness and rigidity, and the carefully selected use of laboratory tests. One alone is not sufficient but the combined knowledge is necessary for the deduction of a true diagnosis. To be able to arrive at a real diagnosis, therefore, it is necessary for every physician to keep abreast the times with modern aids to diagnosis, always remembering that there are two highly important methods in diagnosis never to be slighted or forgotten—a complete and careful history and a thorough physical examination.

Since pain is the major symptom in these acute abdominal cases it demands clear interpretation. I believe in accepting Morley's differentiation of visceral from somatic pain because it offers a better explanation of the mechanism involved in direct and referred pain. "Visceral pain is noticed about the umbilicus in strangulation of the small intestine, in the mid-hypogastrium in obstructing carcinoma of the transverse colon, and in the mid-epigastrium in biliary colic. Somatic pain must be localized on the surface and hence is truly referred, as in the case of localized pain and tenderness in the right iliac fossa in appendicitis, of pain in the back from a duodenal ulcer with posterior adhesions, and of pain in the upper abdominal wall associated with pleurisy. The early visceral type of pain is essentially an obstruction to a tube, the natural reaction of such an organ to injury, whereas the somatic type of pain is due to a direct irritation of the sensitive peritoneum."

I would like now to return for a minute to laboratory examinations as an aid in diagnosis. I believe that the procedures of blood count, urine analysis, blood chlorides, bleeding and coagulation times, and sedimentation tests are all highly important guides not alone as an adjunct in diagnosing but also to give us an index as to the patient's general condition. For example, the acetone and diacetic acid in the urine warns us of an acidosis, blood chloride changes of dehydration, etc. Our care of the individual patient can be greatly enhanced by this knowledge. There are, I believe, many cases operated upon by two surgeons doing the same type of operation under the same anesthetic in which one patient gets well while the other dies. Taking into account that all individuals are different, I still believe by the aid of laboratory tests and being guided in our treatment by them, such as the use of chlorides, glucose and saline, a number of the mortalities can be reduced. While the operative technique, I believe, is highly important I also feel that the pre- and post-operative care cannot be too greatly emphasized. The laboratory is the barometer that helps guide us through the storms of toxemia, dehydration, and the subsequent prevention of mortality.

The X-ray at times is helpful in guiding us to

a diagnosis. An example of this is the differentiation between a stone in the right kidney and an acute appendix lying upward in the external pericolic groove. A flat plate of this abdomen may reveal a stone shadow and help in our decision.

The leucocyte count is an important aid in diagnosis, and while at times it may present a confusing picture nevertheless in the great majority of instances is helpful. An example of its help occurred about two weeks ago to me. At a children's hospital there was a child admitted to our service with a diagnosis of acute appendicitis. It had a twelve-hour history of generalized abdominal pain, temperature of 102°, nausea and vomiting, bowels slightly constipated, pulse 120. Examination revealed generalized abdominal tenderness but no localization associated with diminished peristalsis. The urine was negative. The blood count showed 8,000 leucocytes with 85 per cent polys. I decided to watch the patient after this blood count. Within twenty-four hours the patient was entirely well with normal temperature. The four days following we had eight similar cases admitted; all had about the same counts and all were well within thirty-six hours. I feel the blood count was a great help in these cases. We are now working these cases up to report to the Pediatric Society next fall.

Now we must realize that after a careful history, examination and laboratory reports with their deduction resulting in a diagnosis, another real problem confronts us. This question is whether an immediate operation should be done or a delay for preparation. By delay I do not mean ten or twelve hours but one of only an hour or two. There are ofttimes cases which can be made much better operative risks by a transfusion before operation, or more especially cases of obstruction where there has been a loss of chlorides by vomiting, when infusions of saline with glucose are very beneficial. Patients at times I feel should be allowed an hour after admission to a hospital to recover from transportation. These decisions must be left to the surgeon in charge and vary with each case. The only rule one can set for "the acute abdomen" is an early diagnosis and early surgical intervention. The late John B. Deaver felt so strongly on this point his statement concerning it was, "In the acute abdomen the greatest aid to diagnosis is the aseptic scalpel applied early." With regards to early surgical treatment of the Acute Abdomen, George P. Muller has aptly stated that "Gunshot and stab wounds represent one extreme and intestinal obstruction the other, in the matter of time, with acute appendicitis in between."

To consider all of the conditions responsible for "the acute abdomen" in one paper is indeed impossible. I will therefore take four conditions as representative of types and discuss them to represent the care of these groups. These four acute abdominal affections requiring immediate surgical treatment are appendicitis, perforated ulcer, intestinal obstruction and traumatic injury, and we may use the lessons derived from their study as examples for the treatment of the others.

Of all the conditions classed as causative factors for "the acute abdomen" the outstanding one is acute appendicitis. This disease has received an increasing prominence in our medical literature and civic propaganda but has it received its proper share. We hear, for example, the plea for funds to carry on cancer research and a great national educational programme for instruction of the public about seeking early advice about lumps and loss of weight, etc. Do we, however, hear all of the shouting about acute appendicitis in a national educational plan. We, in Philadelphia, have perhaps heard more on public instruction regarding pain in the abdomen as there has been a campaign carried on there. Now with all of the shouting to the public about cancer and practically no advice to the public that appendicitis, we must realize that about 50,000 persons die in the United States annually of carcinoma at an average age of 58 years, while 30,000 persons die each year of acute appendicitis at an average age of 26 years. The 30,000 deaths at 26 years represent a part of the population who have just finished training and are about to produce, while the 50,000 at 58 years have almost finished their production period. I feel, therefore, that appendicitis, as far as the public's information is concerned regarding its seriousness, is sadly neglected and does not hold its proper place in the sun. If we consider Bower's figures for Philadelphia, we see the following: In 1932, in ten of the largest cities of Pennsylvania, exclusive of Philadelphia, the mortality rate from acute appendicitis was 20.5 per 100,000. In the same year the mortality rate in Philadelphia was 11.3 per 100,000. What is the answer? Is

the surgery in Philadelphia better than in other cities? We do not feel that it is. We believe, however, that this lowered mortality rate is due to a two-year course of education of our public. This has been done through posters in drug stores and stickers on physicians' envelopes and also sent to school children. These stickers advise of the seriousness of any abdominal pain lasting six hours or more, warning about the use of cathartics, and advising early consultation with the physician. 600,000 of these stickers were sent to about 3,000 physicians in two years. This programme was sponsored by the Philadelphia County Medical Society and endorsed by the Department of Public Health.

We thus feel, then, that in the high mortality rate in appendicitis, the patient is more often to blame than the physician, although the physician too often is not firm enough in insisting upon immediate surgical care of the case but yields under pressure to the wishes of the family.

It is easy in most cases to diagnose a case of acute appendicitis, and this is especially true in the male. With a person previously well who complains of abdominal pain usually starting in the epigastrium, then localizing in about six hours in the right lower quadrant, associated with nausea and vomiting and a tendency toward constipation, about 80 per cent of the story is present for the diagnosis. The examination usually reveals a mild temperature, 99° to 100°, pulse rate of 110 to 120. Localized tenderness and slight rigidity in the right lower quadrant with two signs used by the late John B. Deaver of pain in the right lower quadrant on deep inspiration or coughing, these with an increase in the leucocyte count complete the picture. In the female there must be a finer accounting as an acute pelvic inflammatory disease, ruptured extra-uterine pregnancy or a twisted ovarian cyst may complicate the diagnosis. With, however, a carefully taken history, pelvic examination, blood count and sedimentation test the differentiation is made comparatively easy. Acute salpingitis is the one condition which does not need immediate operation and hence an error in differential diagnosis is not of serious moment.

The difficult case to diagnose is when a history of appendicitis is present with a question of pyelitis or acute cholecystitis. Severe abdominal pain as a threshold symptom is almost unheard of in pyelitis, nor is the pain in acute gall-bladder generalized in the beginning but localized to the epigastrium and stays in this general area unless later on a peritonitis occurs. A pelvic position of the appendix may give left-sided pain and tenderness. This confusing finding may be cleared up by a pelvic or rectal examination. Thus the diagnosis of acute appendicitis is fairly simple and as a general rule the treatment is only one and that is not to procrastinate by the use of ice-bags, etc., but to operate. The time for operation is immediately on making the diagnosis.

In regards to the second of our type cases the acute perforation of a duodenal ulcer, I know of no other condition in the acute abdominal group that is so easily diagnosed. This condition is usually diagnosed early as the pain is so severe the physician is called immediately. On arriving he usually gets a history of severe pain coming on after a meal or while at work. The typical board-like rigidity so pathognomic of perforation leads the physician at once to the diagnosis.

The confusing factors may be acute pancreatitis, acute cholecystitis and acute perforation of an appendix. While the tendency recently is to delay in operation an acute pancreatitis, nevertheless there is another tendency for early operation on the acute cholecystitis cases. Appendicitis is a definite indication for operation. Therefore, in an abdomen with sudden sharp pain, board-like rigidity and an associated shock, our indications for operation are 100 per cent. If I may refer again to a statement of the late John B. Deaver when he was asked at a meeting of the Southern Surgical Society how he made the diagnosis in an acute perforation of a duodenal ulcer he said, "I never have to make one, my internes make them for me." I believe the greatest error in these cases of perforation of an ulcer comes with operating these cases for acute appendicitis and finding a slightly injected appendix and a mucoid-like fluid which gives us the clue to explore the upper abdomen.

The demand for early operation in these cases is paramount. If operated early there should hardly be any mortality. They do exceedingly well. The type of operation must be decided upon by the surgeon at the time of operation—whether just to oversew the perforation or do the combined over-sew

plus a posterior gastro-enterostomy. The question of drainage is a debatable point and must be decided by the individual surgeon.

Bands of adhesions, carcinoma of the colon and hernia are almost invariably the causes of intestinal obstruction in the adult. Volvulus intussusception are also possibilities. Intestinal obstruction is indeed an acute surgical emergency. Early diagnosis followed by early operation is demanded in these cases. In seeing a patient with a history of a previous abdominal operation with a colicky type of pain which is increasing in severity, nausea, vomiting, rapid pulse, the first thought should be of intestinal obstruction. Pain in the back from mesenteric pull is a fairly constant symptom.

On examination of this patient we find generalized tenderness with sometimes local tenderness over the region of the obstruction. We find hyper-active peristalsis early with a rather high-pitched note. If we understand the mechanism of the symptoms in obstruction it helps tremendously to interpret the picture. Obstruction, of course, is the blocking of a hollow tube with subsequent interference with its blood supply. Increased peristalsis with pain, distention and vomiting are the manifestations of the former, while increasing temperature, pulse rate and sepsis are indications of the latter. In this type of case I am speaking of the complete acute obstructions.

These obstruction cases need considerable preoperative care, and as early operation is advisable is calls for rapid work. At the Lankenau Hospital we routinely have every obstruction case have a gastric lavage after which a Jutte tube is passed into the stomach and left in place during and following operation. The reason for this is twofold. First, it prevents vomiting of stomach contents under anesthesia with inspiration of the material into the lungs, and, secondly, it takes care of gastric drainage post-operatively and may be connected with a Wagensteen apparatus for small bowel drainage. The next consideration in these cases is to build up the patient's fluids and chlorides which have been lost by vomiting. We believe an infusion of normal saline 1,000 c.c. is of paramount importance as a pre-operative procedure. The laboratory is a great aid in guiding us as to the continued need for chlorides in these cases.

In regard to hernia as a cause for intestinal obstruction I see no reason why time should be lost in trying to differentiate between an incarcerated hernia or a strangulated hernia. If signs of obstruction are present, I would operate and not waste time on an academic discussion.

The history of an obstruction is an important factor in guiding up to a correct diagnosis. As an example of two types, I present the following: A patient having had a previous operation, colicky pains, nausea, vomiting, distention, no fever, no leucocytosis and active peristalsis, the assumed diagnosis is intestinal obstruction due probably to adhesions. On the other hand, an elderly person with attacks of indigestion, vague cramps, increasing constipation with perhaps some diarrhea, increasing distention with some vomiting, the diagnosis is intestinal obstruction probably due to a carcinoma of the colon. This differentiation is more important for the surgeon, however, and helps him decide whether to do an exploratory for adhesions or just a cecostomy to primarily relieve the obstruction in carcinoma before doing his resection. I believe most of us appreciate the extremely poor risks that most obstruction cases present and guard against too much surgery or exploring at the primary operation.

Traumatic injury to the abdominal contents is our last type. These cases are constantly increasing in every hospital in the country. Probably the increased speed of motor travel and the large number of Dillinger protégés are responsible for this increase. They indeed present a varied picture of possibilities and are most interesting cases from the standpoint of diagnosis, although, as a rule, too much time cannot be spent in pre-operative discussions and postponements. When we have a traumatic injury to the abdomen without puncture there are certain types of injury to be thought of. They are rupture of the spleen, liver, bladder, kidney, intestine or hemorrhage from the mesentery. The outstanding guide is shock. This should be recognized immediately. Should a traumatic abdomen be brought in with marked pallor, shallow respiration, weak rapid pulse and low blood pressure, no time should be devoted to questioning as to what happened but immediate treatment of shock with immediate decision as to the surgical procedure. Operation should rarely be done with a systolic pressure 80 m.m. or less. Yet operation is necessary. Therefore, immediate treatment for shock is

started, and as soon as the pressure responds to treatment operation should be done. The sequence in this type of case is shock treatment, support against the loss of blood by infusion and transfusion, and operation. Each must follow the other as rapidly as possible because the mortality is directly dependent upon the hours of delay. In regards to rupture of the intestine the amount of peritonitis depends on the spilling of bowel contents. Since there is a spasm of the bowel primarily due to trauma immediate operation is essential.

The signs of a rupture of bowel, bladder, or hemorrhage are usually generalized abdominal pain, board-like rigidity, labored respiration and tenderness. A leucocyte count which is rising is a sign of value in hemorrhage, but not so in peritonitis since it takes many hours to manifest this. The red cell count is of little importance early in hemorrhage and thus cannot be used as a guide. Ruptured bladder may be ruled out by catheterization of the bladder and withdrawing urine. Urine should be examined for blood which then might suggest kidney rupture. Rupture of the kidney is diagnosed by location of tenderness and muscle spasm. These cases are rarely operated upon unless they develop a large retroperitoneal collection or urinary sepsis. They usually get well. Rupture of the liver is a very severe injury and often dies before operation can be performed. If the abdomen has been opened and active liver bleeding is present, sutures or packing is the treatment. If clotting has taken place, then the blood should be removed without disturbing the clots and the abdomen closed. In cases of rupture of the spleen the best treatment is the surgical removal immediately. This operation can be most difficult and demands good exposure and rapid surgery.

In gunshot and stab wounds, if the wound is a penetrating wound, exploratory operation is important. At times it is surprising how a bullet may enter and leave the abdominal cavity without much damage. We cannot, however, depend on this and operation should be done to explore the abdominal contents, taking great care on opening the peritoneal cavity to listen for escaping gas. One should always be prepared to infuse and transfuse these cases on the operating table if it is found necessary.

It is impossible in the short time to go into detail with regards to every condition causing "the acute abdomen." I only want to call attention to the physician and surgeon that today, to reduce mortality, he must be on the alert, ready to reach a diagnosis after careful history, complete physical examination and laboratory work. Do not delay in calling for surgical action. Delay is dangerous and may give cause for many regrets. Above all, do not consider the operation *per se* as the finished job, as many a desperate case has been pulled through by the active post-operative treatment chiefly in reference to fluids and chlorides. Operation as the rule holds true in conditions causing the acute abdomen. There is no alternative treatment. Ice-bags, enemata and purgatives have no action except that which is harmful. The responsibility rests squarely on the doctor; he must accept it, make his diagnosis and promptly act.

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SOME REFLECTIONS UPON SCARLATINA.*

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This title was chosen because, in the time alloted to me, I am unable to read much more than a synopsis of any complete discussion of scarlet fever. The subject is too great, touches too many vital problems in our social structure, and presents too many problems for analytical consideration to undertake any more than my title calls for.

*Read before the Journal Club of the Physicians of Accomac and Northampton Counties, February 12, 1935.

Scarlet fever may be defined as an acute, infectious, self-limited and contagious disease, generally characterized by an erythematous rash of variable intensity, followed by desquamation, and accompanied with a sore throat of a general hyperemic type. No very concise definition can give the average reader an adequate conception of the nature of the disease; for in analyzing the many pictures of scarlet fever with their varying degrees of

intensity, the many complications to which it is subject, the various degrees of morbidity and gravity of each of these complications, and the various, dangerous sequelae of the disease for weeks or months after an attack, make a concise, comprehensive definition difficult indeed. To put the matter in a "nut-shell," it is sufficient to add to my definition that scarlet fever is an exanthematous disease, mostly of childhood, found in all degrees of intensity in symptoms and pathology, and subject to many dangerous complications and sequelae.

In considering scarlet fever the physician should have in his mind a typical picture of the disease, and then learn to make nice distinctions in differential diagnosis. He should also see the disease whenever it appears in the atypical form, or in its various degrees of intensity, or in the light of its complications or sequelae.

The Typical Case.—This usually begins three or four days, more or less, after exposure to the disease. The onset is sudden, often with a chill and headache; in infants, it often begins with a convulsion. There is usually vomiting. Fever soon rises to 103 or 104 F. or higher, and within twenty-four to thirty-six hours a bright rash appears like an erythematous blush, usually beginning in the lower part of the neck and upon the chest and spreading with various degrees of intensity over the entire body. Close examination of this rash will often reveal minute punctate spots at the hair follicles, and also in the throat upon the hard palate when the rash appears. The patient becomes restless, has more or less headache and a catarrhal sore throat. The latter is extremely red and painful upon deglutition. The nasal passages are also involved with this hyperemic condition. The tongue is at first coated in the center, red at the tip and sides and soon cleans off and becomes intensely red with prominent papillae—the so-called "strawberry tongue." The disease reaches its height of intensity usually on the fourth or fifth day, after which it gradually declines, the rash fading and all symptoms improving until the sixth, seventh or eighth day when the desquamation usually begins. Along with these symptoms the patient usually has, near the out-set, spells of vomiting and the stomach may be quite irritable. Sometimes he is annoyed with diarrhoea in the course of the disease. As desquamation starts, the patient is usually quite weak, pale and, at times, even prostrated; he is also generally more or less anemic. The latter feature is often well marked. Convalescence is by lysis, and is more or less slow. Desquamation continues usually from one to three weeks.

With this picture before us, we must ever bear in mind that all these symptoms are subject to considerable variation, according to the intensity of the disease, even in the typical and the moderately severe forms. In the mildest cases as well also as in the worst forms, many symptoms common to the disease may be absent or unrecognizable, as they vary greatly in intensity; they may be covered up, or lost sight of, in view of the many changes in the pathology or in the various complications that may arise.

Classification and Nature.—In considering scarlet fever, if I had the time to give anything like a comprehensive view of the subject, I would be inclined to give at least four classifications of the disease for analytical study and discussion: (1) The typical; (2) the very mild; (3) the moderately severe; (4) the very severe, including those with the worst complications, and the so-called malignant cases. Even the most constant symptoms in each of these classifications may show many changes or deviations from those found in the typical cases. Take, for instance, the erythematous rash: this may sometimes be found in patches, and the eruption may be macular, like in measles, or there may be small areas of vesicles. Again, the eruption may cover only small parts of the body, and in some rare cases not even be recognizable at all. This may be true in the very mildest cases or the very worst cases. Indeed, in some of the worst cases only slight evidences of the rash may appear upon the closest inspection, and even then only after the death of the patient (Holt).

Again, we may take the throat symptoms. These may represent far more than a slight hyperemia or the characteristic flush, so generally seen in the typical cases. The catarrhal symptoms may all be intensified. There may be spitting of filthy catarrhal secretions or even bloody mucus, more or less purulent, and in great quantities. I have seen this in cases of only moderate severity. In some cases the tonsils are greatly swollen, covered with gray patches, sometimes ulcers, varying not only in color, but in many degrees of inflammatory stages, even up to the point, in the severe types, of gangrene and extensive sloughing. In some moderately rare cases

these gangrenous spots sometimes slough through an adjacent artery and close the scene with a fatal hemorrhage. More frequently, however, there is a milder form of ulcerations, and, more generally still, a characteristic scarlatinal membrane of the streptococcic type. This membrane may cover the tonsils, the soft palate, the uvula and the fauces, sometimes extending into the eustachian tubes, setting up either a single or, more frequently, a double otitis, and not infrequently further complications, a mastoiditis or even a meningitis. This membrane, seldom invades the larynx like diphtheria, though I have known it to do so in a case that quickly ended fatally. In such cases, I will suggest here that care should be taken to exclude in our diagnosis the possibility of a diphtheritic infection also. Different shades of throat infections in scarlet fever, like other streptococcic infections, may be the source of a general toxemia or a septicemia. It may even be the source for a general pyemic condition. More frequently, however, in the moderately severe cases, the lymphatic glands of the neck are infected, sometimes intensely so and quite extensively, and often these infect the cellular adjacent tissues of the neck. Under these conditions, not infrequently abscesses develop. If the pus from these are not released by operative interference, the outcome is likely to be either a graver, general toxemia or a pyemia, or additional complications, such as a severe arthritis, or a pleuro-pneumonia, followed often by an empyema, or an endocarditis with a possible embolism, pericarditis, circulatory disturbances with a weak intermittent pulse, followed with more or less pulmonary edema. But the case may not stop here. The kidneys may become seriously infected, either from the general infection from the blood-stream, or, secondarily, from local infection from distant parts. In such cases we may have either a glomerulo-nephritis; or a cellular invasion of renal interspaces, possibly developing later in life, in some cases, into an interstitial nephritis; or we may have serious involvement of the cellular structure of the uriniferous tubules which, during desquamation, may even cause convulsions or coma by blocking the lumen of the tubules, thus producing a decided check in the natural elimination of urea. From other causes, we may also have suppression with convulsions and coma.

Again, another word in regard to the general toxemia of scarlet fever. This, as I have intimated, might be light or extremely severe. Many patients die early in the disease of a general streptococcic septicemia; others linger on, declining into a state of progressive anemia with extreme weakness and prostration, only to finally succumb to some of the many complications already mentioned. In some very rare cases symmetrical gangrene has been reported. This gangrene may appear upon the buttocks, the thighs and the arms, and so may close the life of the patient—with an offensive picture indeed. The exact pathology of these cases is said to be obscure (Holt).

Now a word about *Etiology*.—To my mind, this is still uncertain, though I admit for many years it has been conceded by the most noted bacteriologists that some strains of streptococci can be found in the secretions of the throat in practically all well-marked cases of scarlet fever in the latter part of the first week. This has appeared to many physicians as conclusive evidence as to the leading factor in its etiology. This view is also strengthened by the hemolytic features in the blood of scarlet fever patients, so generally found in well-developed cases, and the very common findings of streptococci in the blood stream of the septic cases. To offset this evidence of a purely streptococcic etiology it may be said that some years ago in thirty inoculations made by Dr. George F. Dick upon healthy persons with blood serum from scarlet fever patients in the early stages of the disease, and with filtered mucus secretions from the throats of these patients, and from cultures of streptococci taken from these same throats, not a single typical case of scarlet fever was developed in these inoculated persons (Weaver). Whether or not Dr. Dick has made any more recent experiments that will fully offset these, I am unable to say. Moreover, whether or not it can be established that some strains of the streptococci are the direct cause of scarlet fever, it is very generally conceded that they do contribute greatly to scarlatinal toxemia and are the direct cause of many of the dangerous complications. They are also frequently found in the blood stream of the septicemic cases. Now, in view of these facts, it seems to me most probable that scarlet fever, like influenza, is caused by a mixed infection, the most dangerous of which is some strain of the streptococcus. This view at present accounts for only one of the factors in its etiology.

Treatment.—This, in my hands, has been almost

entirely symptomatic, and is similar to the treatment of other fevers of infectious origin, with especial attention to the throat, the ears, the heart and the kidneys. Each of its complications should be treated as they arise. Many of the mild cases need very little treatment. The severe cases with high temperatures should be treated with cool sponging, or baths, and in some cases with some of the mild antipyretics. In one of my cases of extremely toxic symptoms, very high temperature with muttering delirium, while sinking into a coma and supposed to be dying, the patient was relieved of these grave symptoms, almost like magic, by putting him in a cold pack. Following this his kidneys became more active, his temperature fell, and he made an uneventful recovery. Again, in some cases with complications surgery may be necessary. For instance, abscesses of the cervical glands, as abscesses elsewhere, should be opened and drained; and not infrequently a paracentesis, sometimes a mastoid operation, must be performed. Also following the complication of a pleuro-pneumonia an empyemic case must be drained. The same may be said in some of the abscesses in the kidney complications or sequelae. Here it is obvious that the most pronounced cases of streptococcic septicemia and the pyemic cases usually die; but some of the less severe forms of the disease with the above complications may be helped by timely surgery. Just here, however, the greatest precautions should be observed in this kind of surgery, as we have on record an outbreak of scarlet fever, following the operative procedure of draining a scarlatinal empyema in a hospital (Holt).

In this discussion of scarlet fever, I am unable to go into all the details of prominent features of the disease, or of its treatment, and so, in a general way, I will suggest the adoption of similar measures in the treatment that we usually observe in most of the infectious fevers, especially typhoid, pneumonia, influenza and the like, in regard to the hygienic conditions, diet, fresh air, and in the protection of others from contagion. In regard to diet, Dr. J. McCrae used to insist that this should be milk for about three weeks. Others of equal authority added to milk a mild farinaceous diet. It is generally conceded that the diet should be light, liquid or semi-solid with the elimination of heavy proteid substances. The patient should be isolated at the very start, kept quiet and in bed for a week, more or less, after fever and all the dominant symptoms have subsided. The physician throughout the whole course of the disease should be very watchful for the first symptoms of any of the many possible complications, and always bear in mind the not infrequent occurrence of another disease, as a possible complication, such as measles, pneumonia, influenza, facial erysipelas, varicella, variola, even typhoid fever, and especially diphtheria. The latter is a frequent complication in such cases as present a membranous angina. Moreover, in cases where we have this latter complication, diphtheritic antitoxin should be administered immediately, as in a case of simple diphtheria alone. I once followed this course in a severe case of this mixed infection with most excellent results. In this case the grayish membrane had even invaded the nares and could easily be seen all over the mucous membrane in both nostrils. Following this almost magic success, I have given diphtheritic antitoxin, for its phagocitic action, in some pronounced cases of scarlet fever alone with apparently good results. I attributed the benefit to horse-serum.

This now brings me to *the specific treatment of scarlet fever with the serums.* For many years noted physicians, acting upon the assumption that streptococci are responsible for the dominant symptoms and toxicity of scarlet fever, have produced serums, from time to time, made from various strains of this micro-organism. One of the most successful of these physicians was Moser, of Vienna. He claimed to have used this in 400 cases with much success, and it was used in Europe quite extensively, many claims for its value being made, though it was not so well received in this country. Following Moser's claims, however, for the value of his serum, many of our American physicians have followed his example in producing serums from various strains of streptococci, and these have been tried from time to time with varying degrees of success. Bingher, of New York, and others, have departed somewhat from this. They tried and advocated the use of blood and blood serum, taken from convalescent scarlet fever patients. Many favorable reports have been given following the intra-muscular injections of this blood serum. Even Koch, some years ago, thought highly of this method of treatment in severe cases of scarlet fever of a high degree of toxicity. Following quite a number of these reseachers, in the experimental stages, Dr. George Weaver, of Chicago,

and the two Dicks, Geo. Frederick Dick and wife, have more recently contributed their observations, and the latter two their achievements with blood serums from convalescent scarlet fever patients, and the serums also made from strains of streptococci. Dick's serum has been highly extolled by some, while it is looked upon as no better than Moser's serum by others, and by others still, of doubtful value. I am not yet ready to pass an opinion upon its efficacy. A little knowledge of the history of many of these serums with their value, their frequent disappointments, and, in some cases, their positively harmful results, have put me upon the waiting list for more evidence of their value before I risk an opinion as to where they really belong. And so I appeal to the next decade for a more crystallized opinion of the medical profession at large as to their real value.

In conclusion, I may say that there are many more interesting features about scarlet fever, including its differential diagnosis, the many details in its relations to the public, its degree of contagiousness compared with other infectious diseases, its many minute details in each step in the varied pathology of its many possible complications and sequelae, also in the blood changes in the severe forms of sepsis. Likewise, we find much of interest in the features of hemolysis in the pronounced cases of progressive anemia, and in the characteristic features of leucocytosis, as found in scarlet fever—while absent in many other conditions of an infectious nature—and in the special forms of purpura, found in rare cases of scarlet fever either as a most distressing complication during the course of the disease, or, years afterwards, as a most dangerous sequel; but for brevity's sake, I must omit them in this paper for any further discussion.

REPORT OF A CASE OF ACUTE SUPPURATIVE APPENDICITIS COMPLICATED BY MULTIPLE LIVER ABSCESSES.

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This unusual case of appendicitis with multiple abscesses of the liver is interesting because it is believed the complication preceded the appendectomy and was not, as is usually the case, a late development. Secondly, it emphasizes the danger of not bringing cases of acute appendicitis to early operation; and, thirdly, it shows a complication of the disease not often encountered but which should be thought of whenever a case of appendicitis does badly and there is no other obvious cause to explain the symptoms.

CASE REPORT

Mr. J. A. L., age 19 years, was admitted to St. Luke's Hospital, August 18, 1934, having been referred by Dr. J. K. Richardson with a diagnosis of acute appendicitis. Three days before admission he refused supper because he was not hungry. About 8 P. M. the same day he was seized with a sudden cramp-like pain in his epigastrium, which radiated over the entire abdomen. Shortly afterwards there was nausea but no vomiting. On the following morning, which was the day before his admission, he "took salts" on the advice of another physician. The first dose was vomited, but the second was retained with a resulting free purgation. At this time the pain and tenderness became more marked in the right lower abdomen; fever was present, and he felt chilly. During the next twenty-four hours he had three shaking chills. The last was about two hours before admission, at which time he was first seen by Dr. Richardson, who stated that his temperature was 104.2°. His past history was negative except for one mild attack of abdominal pain six months before.

When the patient reached the hospital his general appearance showed he was extremely ill. He was in a profuse perspiration and complained of chilliness when the bed clothing was removed for an abdominal examination. The lower right abdomen was exquisitely tender with slight rigidity on pressure. His white blood count was 20,800, with 90 per cent polys and 10 per cent lymphocytes. Uri-

nalysis gave negative findings. His temperature was 101.4°. The diagnosis of acute appendicitis was confirmed and at operation about two hours after his admission a gangrenous appendix was removed. The wound was closed without drainage. Dr. Budd's report on the appendix was as follows:

"An appendix is received which measures 10 cm. in length by 1-1/3 cm. in diameter. It is swollen, necrotic, enveloped in fibrin, somewhat angulated. Lumen blocked at base, widely dilated elsewhere. Filled with pus. No concretions. All coats necrotic. Diagnosis—acute suppurative appendicitis."

Shortly after returning from the operating room the patient had a chill, and his temperature again reached 104°. The fever soon subsided and he was thought to be doing well. On the third post-operative day he began to take the usual liquid nourishment. On the fourth day he had another chill. The abdomen was flat and not tender but his facial expression was bad and he looked acutely ill. His leucocyte count was 19,000, with 90 per cent polys. Numerous counts done later ranged from 16,000 to 30,000, all with poly counts of 90 per cent or more. There was a slight icteric tinge to the sclerae. His wound was dressed at intervals and on the fifth day an abscess was found and about an ounce of colon pus evacuated. It was hoped that this might solve the problem but it did not. Instead his temperature reached 104° every evening and dropped to 97° in the morning. This type of fever continued during his entire subsequent stay in the hospital. Blood cultures were negative. Numerous chest examinations were made because of pain on the right side but all were negative.

The patient then developed considerable discomfort from pain in the region of the gall bladder and right axilla which radiated to the right shoulder. The liver dullness increased. Slight moisture at the base of the right lung was noted. Repeated X-ray examinations for evidence of subphrenic abscess were negative, but the diaphragm was very high. The whole picture was one of marked sepsis. His hemoglobin which had not been recorded previously, was 40 per cent. Blood transfusions were given but no general improvement was noted. It was believed there was either a subphrenic or liver abscess. His complaints persisted and enlargement of the liver was apparent.

On October 5, 1934, seven weeks after admission, an incision was made in the epigastrium over the bulging mass and several areas of fluctuation were found in the liver. The wound was left open and packed with gauze. Two days later the liver was incised with a cautery and a small amount of thin greenish yellow pus was evacuated. The opening in the liver was packed with cigarette drains. Cultures and smears of the pus showed streptococci. The drainage at first was scant but later became profuse at times. This procedure did not materially change his condition. He continued to run a very septic course and on November 17, 1934, his family decided to take him home where he died about two weeks later.

This case stresses the need for early surgery in appendicitis. I believe that the complication was present before the patient came to the hospital, rather than a post-operative one. The question of whether the wound should have been drained at the time of the original operation came up, of course, very promptly in one's mind. Though I am inclined to drain cases that other operators would not, my belief that the outcome would not have been affected by drainage at the time of the appendectomy is strengthened by the fact there was no reason to believe that the wound infection was a result of peritonitis.

Appendicitis is by far the commonest cause of liver abscess in non-tropical countries.[1] It is fortunately a rare complication and one which as a rule is associated with suppurative pylephlebitis. In most cases small septic emboli become detached from a thrombus in the immediate area of an inflamed appendix[2]. These emboli usually are numerous and very septic, producing multiple abscesses throughout the liver with a resulting rapid death. Most of the abscesses occur in the right lobe because of the distribution of the portal vein. It has long been known that there are two currents of blood in the portal vein,—one from the superior mesenteric, which goes to the right lobe, and one from the inferior mesenteric and splenic, which flows to the left lobe. Occasionally solitary abscesses develop but these form a very small portion of the total number of cases.

The symptoms of a localized abscess are quite different from those of multiple abscesses. The solitary abscess develops slowly and there is nothing characteristic in its symptomatology. Multiple ab-

scesses develop suddenly with rigors, intermittent temperature, rapid prostration, and grave constitutional upsets. After a variable interval, usually some weeks, a patient who has had appendicitis develops a rise in temperature, malaise, and later, perhaps, enlargement of the liver associated with pain in this area. Jaundice is a rather constant finding, as is also a decided leucocytosis. According to Keen's *Surgery*,[3] hepatic abscess, with or following appendicitis, may come about through one of three ways: (1) Most commonly through the portal vein and associated with a pylephlebitis; (2) through the lymphatics from the surface of the liver; and (3) through continuity of destruction from parahepatic abscesses. In two cases of solitary abscess reported by Dr. L. A. Bidwell with recovery, one occurred after opening a well localized appendiceal abscess three weeks after the initial attack; the other after operation for acute perforative appendicitis. There is reason to believe that in these solitary abscess cases the infecting organism is mildly harmful as compared to the multiple abscess cases; hence a better prognosis. As to the prognosis in the multiple abscess cases, it is agreed by all writers that practically all of them die. Indeed, the most encouraging feature about these cases is their exceeding rarity. In fact, many clinics in reporting on appendicitis by the thousands of cases seem not to have had a single case.

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A REVIEW OF ECLAMPSIA AT THE UNIVERSITY OF VIRGINIA HOSPITAL.*

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The relative frequency of eclampsia in this locality prompted us to analyze the cases occurring at the University of Virginia Hospital during the past ten years. The survey covers the period from January 1, 1925, to December 31, 1934, during which time there were 3,910 deliveries in the hospital. To this number have been added fourteen cases of eclampsia which were admitted after delivery and three patients who died undelivered, giving a total of 3,927 cases. Of this number, 441, or 11.23 per cent, had some type of late toxemia of pregnancy as evidenced by hypertension, albuminuria, headache, edema, and visual disturbances with or without convulsions. Of these 441 cases of toxemia of pregnancy, 112, or 25.39 per cent, had convulsions, giving an incidence of eclampsia in 2.85 per cent of all labors.

*From the Department of Obstetrics and Gynecology, University of Virginia.

Williams[1] states that eclampsia occurs in less than 1 per cent of all labors, and comparison of our figures with other reports (Table II) shows the increased incidence in this locality. This increase is undoubtedly influenced by the type of patients admitted to the obstetrical service, many of the admissions being of an emergency nature for some serious complication of pregnancy. Practically all of the cases of eclampsia were emergency admissions, the patients never having been seen either in our prenatal clinic or by any physician until the

TABLE I—INCIDENCE OF TOXEMIA AND ECLAMPSIA

Total Number of cases	*Toxemias*		*Eclampsia*		
	Number	Per Cent of Total	Number	Per Cent of Total	Per Cent of Toxemias
3,927	441	11.23	112	2.85	25.39

TABLE II—REPORTED INCIDENCES OF ECLAMPSIA

	Total No. of Cases	*Total No. of Eclampsia*	*Percentage*
Brunzel,[2] 1924	7,384	54	0.73
Davis and Harrar,[3] 1925	152,248	879	0.57
Greenhill,[4] 1926	29,587	83	0.28
Stander,[5] 1929	8,585	100	1.16
Binder,[6] 1934	13,354	123	0.92
University of Virginia	3,927	112	2.85

onset of severe symptoms. A large proportion of the patients come from the sparsely settled rural areas. In the entire series of 112 patients only three had ever been seen in the prenatal clinic of the hospital, and not one of these had been a regular attendant.

It has always been thought that eclampsia occurs more frequently in colder climates, but this report comes from an institution which is further south than any of those quoted above, while Stander's figures, with an incidence second to ours, are from Baltimore which is located a little further north. This suggests that inadequate prenatal care is a factor which overshadows that of geographical location.

In analyzing the incidence of the disease to deliveries by years, no distinct difference is found in the incidence for any one year. In 1925, the first year studied, the incidence to deliveries was 2.3 per cent, while for 1934, the last year studied, the incidence was 3.2 per cent, although during that time the number of deliveries per year had more than doubled. In other words, it suggests that the high percentage incidence is not alone due to the relatively small size of the service, for, although the number of deliveries in 1934 was more than double the number in 1925, the percentage incidence for eclampsia, instead of decreasing, actually showed a slight increase.

The seasonal variation is shown in Table III, and suggests an increased frequency during the spring months.

TABLE III—MONTHLY INCIDENCE

Month of Year	*Number of Cases*
January	8
February	8
March	15
April	17
May	11
June	8
July	7
August	4
September	7
October	10
November	8
December	9

The highest incidence occurred in primiparae, which confirms an old observation. The division of cases according to gravidity is shown in Table IV.

TABLE IV—GRAVIDITY INCIDENCE

Parity	*No. of Cases*	*Percentage*
Primiparas	73	65.17
Secundiparas	13	
Higher Multiparity	26	

There were three instances in which eclampsia occurred twice in the same individual, an incidence of repeat eclampsia of 2.67 per cent. There were only four cases of twin pregnancy and no instances of hydramnios were recorded.

TABLE V—AGE INCIDENCE

Age	*No. of Cases*
Below 16 years	6
16-20 years	51
21-25 years	24
26-30 years	12
Above 30 years	19

Since primiparity in itself is a predisposing factor to eclampsia it is not unusual that the greatest number of cases occurred in patients under thirty years of age. One-half of the cases occurred in patients of only twenty years of age or less.

Approximately three-fourths of the cases occurred before labor (Table VI) and all the deaths were in this antepartum group.

TABLE VI—INCIDENCE OF TYPE OF ECLAMPSIA

	Number	*Percentage*	*Deaths*
Antepartum	83	74.10	17
Intrapartum	9	8.03	0
Postpartum	20	17.85	0

MORTALITY

There were seventeen deaths, or a total rate of 15.17 per cent. During the ten-year period there were in all eighty-three maternal deaths, making a total mortality rate of 2.11 per cent, of which eclampsia was the cause of 20.48 per cent. Of the 112 cases of eclampsia, 71, or 63 per cent, were in white patients, with eight deaths, or 11 per cent, while 41, or 37 per cent, were in colored patients, with nine deaths, or 22 per cent. This ratio of colored and white patients is approximately the same as that for the entire service admissions, although the mortality percentage is approximately twice as high in the colored as in the white patients.

There were seventy-eight live-births and thirty-two still-births, while three patients died undelivered. There was no record made as to the condition of the baby in three patients who were admitted to the hospital after delivery. These figures include four instances of twins, making a total of 116 babies. The infant mortality rate is approximately 30 per cent.

TABLE VII—FETAL MORTALITY

	Number	*Percentage*		
Live-Births	78	67.2	Mothers	112
Still-Births	32	27.6	Twins	4
Undelivered	3	2.6		—
Not Recorded	3	2.6		116
Total	116	100.0		

TREATMENT

Because of a difference in the general trend of the treatment in the first seven years and the last three years of the ten-year period, the cases have been grouped into these two periods. In the first period (1925-1931) there were seventy cases of eclampsia with thirteen deaths, or 18.5 per cent. In the second period (1932-1934) there were forty-two cases of eclampsia with four deaths, or a mortality rate of 9.5 per cent. As the type of treatment seems to be more concerned with the antepartum variety and as all of the deaths occurred in this group, the antepartum cases have also been separated into these two periods. In the first period (1925-1931) there were fifty-two antepartum cases with thirteen deaths, or 25 per cent, while in the second group (1932-1934) there were thirty-one antepartum cases with four deaths, or 13 per cent mortality.

TABLE VIII—MORTALITY IN THE TWO PERIODS

	No.	*Total Deaths*	*Percentage*	*Antepartum*		
				No. Cases	*Deaths*	*Percentage*
First Period (1925-1931)	70	13	18.5	52	13	25
Second Period (1932-1934)	42	4	9.5	31	4	12.9
Total	112	17	15.17	83	17	20.48

In the first period (1925-1931), many of the cases had labor induced immediately after admission to the hospital. Of the fifty-two antepartum cases during the first period, thirty-one had labor induction at one time or another during the disease by the insertion of a Voorhees' bag, while one had labor induction by rupture of the membranes, and another medical induction by the administration of castor oil and quinine. Of the thirty-one cases which were induced by the insertion of a bag, 6, or 19 per cent, died. Of the fifty-two antepartum cases of the first period, three delivered spontaneously at home, nineteen spontaneously in the hospital, fourteen were delivered by forceps, nine by version and extraction, four by breech extraction, and three died undelivered Of the thirteen deaths in the first period, three died undelivered, three were delivered by forceps, one by breech extraction, one by version and extraction, four spontaneously at the hospital, and one spontaneously at home. In the second period (1932-1934), there were eight instances of induction, all except one of which were done after recovery from the primary attack. Five were induced by rupture of membranes, one by bag, one by bougie, and one by quinine. In the second period, of the thirty-one mothers with thirty-three children, two were delivered spontaneously at home, twelve spontaneously in the hospital, thirteen by forceps, two by version and extraction (one twins and one after bag induction), three by breech extraction, and one by cesarean section for contracted pelvis. Of the four maternal deaths in this second period, three were delivered by forceps, and one spontaneously.

TABLE IX—LABOR INDUCTION

Induction	*First Period*		*Second Period*	
	Patients	*Deaths*	*Patients*	*Deaths*
Bag	31	6	1	0
Bougie	0	0	1	0
Membranes	1	0	5	0
Medical	1	0	1	0
None	19	7	23	4
Total	52	13	31	4

During the first period varied types of treatment were used for the control of the eclamptic seizures, while during the second period the treatment was fairly definitely standardized, and approximately the same treatment was used in each case except for minor individual variations. In general, the treatment consisted of sedation with morphine hypodermically, chloral hydrate per rectum, magnesium sulphate two c.c. of 50 per cent solution intramuscularly after each convulsion, and hypertonic

glucose (25 per cent) intravenously 300-400 c.c. at six to eight-hour intervals. Venesection and digitalization were occasionally used when apparently indicated by the exigencies of the individual cases. No attempt at delivery was made until the cervix was fully dilated, unless other considerations, such as contracted pelvis, demanded operative interference. Induction of labor was only done after recovery from the convulsions and the comatose state was either complete, or was as complete as could reasonably be expected after several days of hospitalization (eight instances in the last three years).

Peckham[7] has recently, on the basis of an analysis of the Hopkins' cases, suggested changes in Eden's original classification. He suggests the following criteria, any two of which speak for a severe type: (a) Prolonged coma, (b) pulse rate above 120, (c) temperature 103° F. or more, (d) edema absent or slight, (e) blood pressure 180 or over, (f) more than twenty convulsions. Classifying our cases on the basis of Peckham's modification of Eden's criteria, it is found that forty-four cases would be severe with twelve deaths, or 27 per cent, while sixty-eight cases were mild with five deaths, or 7.3 per cent mortality. The suggested change increases the number of severe cases, but actually lowered the mortality percentage, due to the fact that it still did not remove the five fatal cases from the mild group. Peckham's omission of the quantity of albumin in the urine as a criteria seems justifiable as it was of very little or no prognostic significance in these cases. The other changes suggested by Peckham were of but little significance from a prognostic viewpoint in our analysis and seems to have but little if any superiority over Eden's original classification.

TABLE X—TYPE OF DELIVERY

Type of Delivery	*First Period*		*Second Period*	
	Patients	*Deaths*	*Patients*	*Deaths*
Spontaneous	22	5	14	1
Forceps	14	3	13	3
Breech Extraction	4	1	3	0
Version and Extraction	9	1	2	1
Undelivered	3	3	0	0
Cesarean Section	0	0	1	0
Total	52	13	33 (two twins)	5

PROGNOSIS

Some years ago Eden suggested that the mortality of eclampsia depended upon the severity of the disease and suggested the following criteria as evidence of severity: (a) Temperature above 103° F., (b) pulse rate above 120, (c) blood pressure of 200 mm. of mercury or more, (d) more than ten grams of albumin per liter, (e) absence of edema, (f) prolonged coma, (g) more than ten convulsions. Any case with two or more of the criteria present, was considered as severe.

TABLE XI—CLASSIFICATION ACCORDING TO SEVERITY

	Class	*Number*	*Percentage*	*Deaths*	
				Number	*Percentage*
Eden	Severe	40	35	12	30
	Mild	72	64	5	6.9
Peckham	Severe	44	39	12	27.2
	Mild	68	61	5	7.3

An attempt has been made to group the patients in this entire series as to the severity of the disease in accordance with the criteria established by Eden. On this basis at least forty of the 112 patients can be classified as severe, while seventy-two may be considered as mild or of doubtful severity. Of the forty in the severe group, 12, or 30 per cent died, while of those falling in the mild group only 5, or 6.9 per cent, died.

COMMENT

In reviewing these cases of eclampsia, one is impressed by the high incidence of the disease in comparison to the number of deliveries. The increased frequency can in part be explained by the type of service at the University Hospital and the social conditions of the majority of the clinic patients. It emphasizes the difficulty of health measures in the sparsely settled, mountainous, rural areas where dis-

tances, roads and means of transportation severely handicap efficient medical attention. The absence of prenatal care in practically all of the cases must be of some significance, and illustrates the desirability of some type of care for this social group. It seems true that by prenatal care many of the instances of convulsions could be prevented, for, although prenatal care has not greatly reduced the incidence of the late toxemias of pregnancy, it has permitted the detection of the toxemia, with its subsequent treatment and termination of the pregnancy, before the onset of convulsions. Attention was called some years ago at the Governor's White House conference to the difficulties and at times impossibilities of affording satisfactory obstetrical attention to the indigent rural population in the sparsely settled areas, and it seems that this study emphasizes the hazards of this lack of attention. In any state program of maternal welfare, serious consideration should be given to this group of the population.

The difference in the death rate for the two periods strongly suggests that better results are obtained with more conservative methods of treatment. It is apparently true that most of the mild cases of eclampsia will recover regardless of the method of treatment, while it is equally true that a certain proportion of the severe cases will die regardless of the treatment. This is a factor which should always be taken into consideration in attempting to evaluate methods of treatment. In dividing the cases in the two periods into severe and mild groups on the basis of Eden's criteria, it is found that, of the seventy cases in the first group, 29, or 41 per cent, of them may be considered as severe, while in the forty-two cases of the second period only 11, or 26 per cent, would be considered as severe. This difference in the incidence of severe cases may explain to some extent some of the difference in the mortality of the two periods.

SUMMARY

1. The analysis reveals 112 cases of eclampsia in the past ten years in 3,927 obstetrical cases at the University of Virginia Hospital, an incidence of 2.85 per cent.

2. Seventeen deaths occurred, or a mortality of 15 per cent, all of the deaths occurring in the antepartum variety of eclampsia.

3. The fetal mortality averaged 30 per cent.

4. Grouping the cases into two periods, the first period with rather active and the second more conservative, the mortality in the first period was 18.5 per cent, and in the second period was 9.5 per cent.

5. Classifying the cases in accordance with Eden's criteria of severity, it was found that the mortality in the severe eclamptic group was 30 per cent, while in the mild group the mortality was 7 per cent.

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IDENTIFICATION BY SINUS PRINTS.

JOSEPH MAYER, PH.D., LL.D.,
Washington, D. C.

When in 1899 the Royal College of Surgeons of Edinburgh awarded the Surgical Prize to Sir Logan Turner for his study of "The Racial Characteristics of the Frontal Sinuses," based upon an examination of 578 skulls, no one then dreamed that his work would some day be made the basis for a method of individual identification. For that matter, at the time there was no science of finger-printing either, although the making of thumb-print signatures for business purposes had already been a long-established custom in India and China.

The immediate results of Sir Logan Turner's

work on sinus characteristics were largely negative so far as determining racial differences was concerned. He concluded "that the sinuses possess no distinctive form or size which can be said to be peculiar to any of the great skull types, dolichocephalic, mesaticephalic, or brachycephalic. . . . In comparing the height-breadth indexes of the skulls with the height and breadth measurements of the sinuses, we again find that there is no relation between them. . . . The investigation also proves that the frontal air sinuses are present in all races of men, but that they occur with a varying degree of frequency."

This conclusion seemed to settle the matter of race differentiation by way of the sinuses, but what could not be appreciated then was that it also opened up an entirely new field. If "the frontal sinuses are present in all races of men," they might, if also individually distinctive, serve as a means of identification.

There are, of course, any number of ways of identifying human beings, from birth marks and scars to photographs of the face and bridge-work on the teeth. But most of these identifying marks are either not universally applicable or can be altered by human ingenuity. The face can be "lifted," and what one dentist has done another can undo, if the incentive to eradicate identifying marks is great enough, as it is with the criminal.

When Sir Edward Richard Henry, of Scotland Yard, noticed the thumb-printing practice of India and developed finger-printing as a means of criminal identification, less than thirty years ago, it was felt that the last word on the subject had been spoken. And, in fact, the finger-printing system is now in general use and has proved to be a most effective weapon in the solution of crime and in identifying law breakers. Finger-prints left at the scene of a depredation can be readily developed and comparison with the prints of known criminals can be speedily made. The simplicity of the system recommends itself for non-criminal uses also, that is, as a general means of individual identification.

Nevertheless, there are limitations to the finger-printing system. Clever criminals are finding ways of circumventing its tell-tale evidence (as in acid-treatments, skin-grafting, and use of gloves), and the disintegration of the soft-tissue parts of the body after death often destroys the loops and whorls of the victim of crime before the body is discovered. It is in the latter connection that the dentistry of the mouth has sometimes proved to be a valuable identifying aid, as in cases of drowning or of destruction by fire.

For all such purposes, whether criminal or non-criminal, for people living or long-since dead, identification by way of sinus prints is a much more comprehensive and invariable process than any previously devised. The man most responsible for developing this process and for bringing it to public attention is an internationally-known sinus specialist of London, Vienna, and Lausanne, now of Washington, D. C., Dr. Thomas A. Poole.

When Sir Logan Turner made public his pioneer work on the sinuses, not only had finger-printing as a system of identification not yet been developed, but the science of X-ray photography had only just been discovered by Roentgen in 1895. Turner had had to map out the sinus cavities of the skull by electric transillumination, probing, and laborious dissections of the bony covering. Today, the process of taking a sinus print is almost as simple as taking a finger-print. All that is necessary is for the subject to be placed in a proper position before the X-ray machine, preferably the Water's position, and in a few minutes the print can be developed. Needless to say, there are other uses for the sinus print, especially in the medical treatment of sinus involvement, but we are concerned here principally with its use for identification purposes.

In his work as a sinus specialist, Dr. Poole, a true scientist, invariably begins by having an X-ray picture made. In this way, he has critically examined thousands of sinus prints and as a hobby has developed the art of sinus identification. He has not only found that no two sinus configurations are precisely alike, but he has also observed that there are in the sinus conformations various bases for classification of types and sub-types, which may, in the end, provide a simpler method for indexing and identifying a particular individual than is provided by the loops and whorls of the finger tips. For one thing, there is much more variation in the architecture of the sinus structures than there is in finger-tip patterns. For another thing, many more kinds of measurement can be applied to a sinus print. At least four basic sinus characteristics may be noted around which innumerable special measurements can be developed: (1) the height and breadth of the cavities; (2) the presence or absence

of one or both of the frontals; (3) symmetrical or asymmetrical sinus positions; (4) the position and deviation of the septum.

So far as concerns the possibility of changing the sinus pattern with which the individual is born, there is absolutely no way of making alterations once the pattern is established, as long as the person remains alive. And, after death, there is no more durable portion of the bony structure than this very sinus configuration. It remains the same as long as the skull lasts. Had sinus prints been recorded in Tut-ankh-amen's time, we should now, some three to four thousand years later, be able therewith to identify the mummies in their tombs or the skulls exhumed from ancient Egyptian graves.

Dr. Poole is gradually interesting professional identification specialists in his work. Scotland Yard has been impressed with its possibilities, and so has the Intelligence Division of the United States Navy as well as the Department of Justice. For permanent identification records in the Army and Navy and the Marine Corps, the sinus print provides a much more infallible check than other methods. It could be similarly employed for such activities as the immigration service, for the larger risks of insurance companies, for passengers subject to the perils of the sea and air, for passport identification, for the protection of children of wealthy parents against the possibility of substitution, and for similar purposes. It should not, of course, be regarded as supplanting the use of the fingerprint, but merely as supplementing it where a broader need is indicated.

In conclusion, it hardly seems necessary to point out that in one respect the sinus print is always superior to the fingerprint, for it has prognostic as well as identifying value. It is, in fact, this added significance which has apparently been uppermost in Dr. Poole's mind in advocating its possibilities. The sinus print indicates not only normal contours but also malformations and diseased conditions, some of which have demonstrable connection with abnormal or anti-social tendencies in the individual. Some of these conditions can be corrected and thus possibly save society the expense of manhunts and imprisonments. Others are too far advanced for assistance, but the sinus print nevertheless demonstrates this and should thus ultimately serve as important evidence in court procedures. Dr. Poole, together with some of his colleagues, is at present undertaking a special study of the sinus prints of the insane, the results of which should throw additional light on this important problem. With enlarged facilities, he hopes in the near future to establish a library of sinus prints and to see his ideas of identification and prognosis applied in a number of important directions.

744 Jackson Place, Northwest.

THE ART OF EXPLAINING MEDICAL MATTERS TO OUR PATIENTS.*

GERALD A. EZEKIEL, M. D.,
Richmond, Va.

It is within comparatively recent years that it has become customary for doctors to enter into fairly complete explanations with their patients regarding conditions which they find, and to discuss with them the proposed remedies and what is to be expected from them. Since this involves translating technical matters into language which the patients can understand, it should not be undertaken in a haphazard fashion but should be given careful thought. Such explanations are not given merely to gratify curiosity on the part of the patient, or to exhibit to the patient the doctor's profound knowledge. On the contrary, we must recognize that entering into these intimate relations with our patients is undertaken in order to secure the active cooperation which can only come from mutual understanding.

The physician must first of all determine in each case to what extent it is desirable to make these explanations without reservation and in what cases a modified picture rather than a perfectly correct one may be indicated by the intelligence and temperament of the patient. Therefore, if we are correct in believing that skill in connection with our

*Read before the Richmond Academy of Medicine.

present-day policy is important, we must develop good technique of a general character as well as ability to adapt ourselves to the special indications in each case. All this necessarily involves considerable thought. If we would accomplish our object of securing favorable results from these talks with our patients, they cannot be conducted in a perfunctory manner.

It is difficult for a physician, dealing with the average patient, to appreciate how easily what appears to him a perfectly simple explanation may be misunderstood by the patient, with the result that more harm than good may thus arise.

I will illustrate this by a case which came up recently in my own practice. The patient had pulmonary tuberculosis and I reached the conclusion that artificial pneumothorax was indicated. In medical practice this is very commonly spoken of as producing collapse of the affected lung, and in explaining the situation to the patient I used this term. Up to that time the patient had listened attentively and appeared to understand the situation and to agree to the suggested procedure. When, however, I referred to producing collapse of the lung, is was immediately evident that this produced a most unfavorable reaction. The word "collapse" itself probably terrified him, and apparently he could see no good to be accomplished in completely collapsing a lung already diseased. Whatever may have been his conception, I had for the time being lost the cooperation of this patient and it was only by going back to the start and modifying my explanation that his consent was later obtained.

We must always bear in mind that in spite of the fact the average intelligent person today is far better acquainted with medical subjects than ever before, through radio talks and popular articles in newspapers and magazines, we must not assume a more exact or extensive knowledge of these matters than the facts justify. It might be far safer to assume that our patient in each case is totally ignorant and start from the scratch. If we happen to tell him a great deal that he already knows no harm is done. On the contrary, the average person will feel flattered when he finds that his physician is giving him medical facts with which he is already acquainted and, of course, beyond a certain point a patient is never correctly and intimately acquainted with the facts in regard to his own case.

The above subject may seem an insignificant one to present to the attention of the Academy. It is important that we accomplish in each instance the results we are seeking. Hence, the development of good technique in our presentation of the case to our patients is well worthwhile. We may regard these instructive talks with our patients as a prescription, not given in a careless way, but adapted to the individual case and developed in the same careful fashion with which we expect a pharmacist to fill our written prescriptions. Unless such thought is given, we are likely not only to fail in accomplishing the desired result, but may, as in the instance above cited, actually do more harm than good.

I cannot recall any other instance in which the use of the expression "collapsing the lung" has actually deterred any of my patients from consenting to this therapeutic measure. Yet it is not improbable that in the large number of cases in which I carried out this procedure, while attending physician at Pine Camp and the tuberculosis clinic of the Richmond Health Department, as well as the cases occurring in my private practice, there must have been many who, though consenting to the procedure, nevertheless did so with misgivings which they might have been spared to a great extent and who later suffered unnecessary anxiety by reason of a disquieting conception of what a collapsed lung meant under the circumstances.

Most of this could have been avoided by substituting the term "compression," or, perhaps even better, by speaking of fixation of the lung, as the latter leads naturally to the easily understood comparison of fixation of a tubercular joint or of a broken bone, with the object of securing rest for the affected part. Is it too much to maintain that recovery in many instances might have been hastened by the more correct mental picture and the happier frame of mind thus brought about?

While the subject of this paper is one to which every doctor has, almost of necessity, given more or less subconscious thought, I have considered it sufficiently important to justify direct attention. I have sought briefly to show that there is a real art involved in explaining medical matters to our patients, and that this art is well worth cultivating as a therapeutic measure of positive value, and because of the source of satisfaction which comes to both physician and patient when this art is properly developed and applied.

1652 West Grace Street.

Proceedings of the Medical Society of Virginia

MINUTES OF THE SIXTY-SIXTH ANNUAL SESSION OF THE MEDICAL SOCIETY OF VIRGINIA

October 15, 16, and 17, 1935

Norfolk, Virginia

GENERAL SESSION

Tuesday Evening, October 15

The opening general session of the sixty-sixth annual convention of the Medical Society of Virginia was held in the ballroom of the Monticello Hotel, Norfolk, on Tuesday, October 15, 1935, beginning at eight o'clock p. m.

Dr. William Lett Harris, of Norfolk, Chairman of the Committee on Arrangements, presided and called the meeting to order.

The invocation was said by the Reverend Taylor Willis, Rector of Christ-St. Luke's Church, Norfolk.

Dr. J. W. Hunter, President of the Norfolk County Medical Society, delivered an address of welcome.

After announcements in regard to several features of the program, Dr. Harris presented the President, Dr. Francis H. Smith, of Abingdon, who read his Presidential Address entitled "Through a Doctor's Glasses."

In the absence of any member of the Membership Committee, Dr. Carrington Williams, of Richmond, Vice-President, read the list of members of the Society who had died during the year just closed, and the members of the convention stood for a moment in silence in tribute to them.

List of 38 Members of the Society Whose Deaths Have Been Reported Since the 1934 Meeting

Dr. William Francis Drewry, Richmond, Va., October 19, 1934.

Dr. Wilson A. Koontz, Shenandoah, Va., October 13, 1934.

Dr. Clarence Ruter Dufour, Washington, D. C., September 11, 1934.

Dr. John Dunn, Richmond, Va., November 7, 1934.

Dr. Benjamin May Baker, Norfolk, Va., November 16, 1934.

Dr. Charles Everett Carter Peyton, Pulaski, Va., October 30, 1934.

Dr. John Randolph Garrett, Roanoke, Va., August 28, 1934.

Dr. James William Henson, Richmond, Va., November 28, 1934.

Dr. Henry Jeter Edmonds, Kilmarnock, Va., December 13, 1934.

Dr. Ernest Downer Davis, Sr., Stanardsville, Va., December 3, 1934.

Dr. Dexter P. Cannaday, Roanoke, Va., November 11, 1934.

Dr. John Hendron Bell, Staunton, Va., December 9, 1934.

Dr. William Tilden Smith, Norfolk, Va., December 28, 1934.

Dr. Robert Camden Whitehead, Norfolk, Va., January 27, 1935.

Dr. Charles Clifton Tucker, Blackstone, Va., January 28, 1935.

Dr. A. G. Coumbe, Philadelphia, Pa., October 24, 1933.

Dr. Frank Waring Lewis, Richmond, Va., March 2, 1935.

Dr. John Gibson Davis, Jr., Christiansburg, Va., January 28, 1935.

Dr. Edward Randolph Turnbull, Lawrenceville, Va., March 20, 1935.

Dr. Howe Alexander Jordan, Big Island, Va., March 13, 1935.

Dr. John Davis Dabney Ware, Baltimore, Md., February 23, 1935.

Dr. James Hunt Royster, Richmond, Va., March 22, 1935.

Dr. Ernest Christian Fisher, Richmond, Va., April 15, 1935.

Dr. Luther Addison Robertson, Danville, Va., May 16, 1935.

Dr. Garland E. Faulkner, South Boston, Va., May 30, 1935.

Dr. James T. Leftwich, Highland Springs, Va., June 6, 1935.

Dr. Henry Dewey Ribble, Blacksburg, Va., March 1, 1935.

Dr. Calvin Graham Dold, Buena Vista, Va., June 22, 1935.

Dr. George E. Wiley, Bristol, Va., March 25, 1935.

Dr. Daniel Malloy Prince, Mt. Vernon, Wash., April 10, 1935.

Dr. William Wallace Bennett, Blackstone, Va., August 3, 1935.

Dr. David James King, Williamsburg, Va., August 18, 1935.

Dr. Justus Lee Cooke, Fredericksburg, Va., August 6, 1935.

Dr. Albert C. Stephens, Barren Springs, Va., May 15, 1935.

Dr. Joseph Stuart Hume, Norfolk, Va., July 29, 1935.

Dr. William F. Henderson, Blacksburg, Va., September 23, 1935.

Dr. Chester B. Nuckolls, Hillsville, Va., June 28, 1935.

Dr. John L. Thornton, Warrenton, Va., October 7, 1935.

PRESIDENT SMITH: It is the privilege and the pleasure of the President of your Society, gentlemen, to invite two guests, and only two guests, from outside the State to address this gathering. I have chosen to invite as

one of those guests this year the gentleman who will now speak to us, Dr. Arthur C. Christie, of Washington, D. C. I am sure that you would like to hear something about him. He served in the late war, attaining the rank of Colonel in the Medical Corps, and he is now a Colonel in the Medical Reserve Corps. He is clinical professor of roentgenology in the Medical College of George Washington University. He is a fellow of the American College of Physicians and of the American College of Radiologists, and a past president of the American Roentgen Ray Society and of the American Radiological Association. He was a member of the Committee on the Cost of Medical Care, signing the minority report, and is the author of several books. He is now President of the International Congress of Radiology, which will, in 1937, meet in this country for the first time in its history. This distinguished and able gentleman will now address us on "The Answer of the Medical Profession to State Medicine."

Dr. Arthur C. Christie, Washington, D. C. (*invited guest*), presented his address on "The Answer of the Medical Profession to State Medicine."

The program having been completed, the evening session then adjourned.

SCIENTIFIC SESSIONS

Wednesday, October 16, 1935

Medical Section

The Medical Section of the Medical Society of Virginia met in the dining-room of the Monticello Hotel, Norfolk, and was called to order by Dr. Francis H. Smith, President, at nine-fifteen a. m.

Dr. Paul D. Camp, Richmond, read his paper entitled "Essential Hypertension and Bright's Disease: Their Differential Diagnosis and Treatment," which was discussed by Drs. F. C. Rinker, Norfolk; T. Dewey Davis, Richmond; and J. W. Hunter, Norfolk, and by Dr. Camp in closing.

Dr. Blanton P. Seward, Roanoke, read his paper, "Remarks on the Diagnosis of Coronary Thrombosis," which was discussed by Drs. J. Edwin Wood, Jr., University; Paul D. Camp, Richmond; and Richard Mason, The Plains.

Dr. William P. Caton, of Alexandria, read his paper on "Rocky Mountain Spotted Fever As Found in the East," and this was discussed by Drs. H. A. Latane, Alexandria; J. C. Flippin, University; H. S. Daniel, Louisa; S. A. Anderson, Jr., Richmond; by Dr. Flippin again; by Drs. J. E. Knight, Warrenton; Fletcher Wright, Petersburg; Percy Harris, Scottsville; and Fred Gochnauer, Upperville; and in closing by Dr. Caton.

Dr. C. C. Cooley, of Norfolk, read his paper entitled "Cicatricial Stenosis of the Esophagus: Report of Cases," which was discussed by Drs. A. A. Burke and Benjamin A. Doggett, of Norfolk, and by Dr. Cooley in closing.

Dr. James V. Bickford, of Norfolk, read his paper on "Enuresis in Children," which was discussed by Dr. William P. McDowell, Norfolk, and W. B. McIlwaine, Petersburg, and in closing by Dr. Bickford.

Dr. William H. Higgins, of Richmond, read his paper entitled "The Heart in Myxedema: Clinical and Postmortem Findings."

The program having been completed, the Medical Section then adjourned at twelve-fifteen p. m.

Surgical Section

The Surgical Section of the Medical Society of Virginia, held in the Monticello Hotel, Norfolk, convened at nine-thirty o'clock, Dr. Carrington Williams, vice-president, presiding.

The first paper was by Drs. C. J. Andrews and Richard B. Nichols, Norfolk, their subject being "Unusual Indications for Caesarean Section." This was illustrated with lantern slides and was discussed by Dr. M. P. Rucker, Richmond, and by Drs. Andrews and Nichols in closing.

Dr. Harry J. Warthen, Richmond, read his paper on "Acute Intestinal Obstruction," which was discussed by Dr. C. B. Morton, University; Dr. I. A. Bigger, Richmond, and by Dr. Warthen, in closing.

"Fractures of the Hip" by Dr. M. H. Todd, Norfolk, was the next paper presented.

Dr. Donald M. Faulkner, Richmond, read his paper on "Non-Union of Fractures of the Humerus." These two papers were discussed by Dr. Foy Vann, Norfolk; Dr. H. Page Mauck, Richmond; Dr. M. H. Todd, Norfolk; Dr. C. H. Peterson, Roanoke; and in closing by Drs. Todd and Faulkner.

The next paper was by Dr. J. Shelton Horsley, Richmond, on "Diagnosis and Treatment of Cancer of the Large Bowel." This was discussed by Dr. I. A. Bigger, Richmond; Dr. H. D. Howe, Hampton; Dr. R. L. Payne, Norfolk, and by Dr. Horsley, in closing.

"Vascular Surgery Necessitated by Trauma" was then presented by Dr. Julian L. Rawls, Norfolk, the discussion being opened by Dr. I. A. Bigger, Richmond, and closed by Dr. Rawls.

The paper on "Present-Day Treatment of Certain Malignant Diseases" by Drs. Vincent W. Archer and W. L. Kilby, University, was read by Dr. Archer, and discussed by Dr. Fred Hodges, Richmond; Dr. J. Shelton Horsley, Richmond; and in closing by Dr. Archer.

The Surgical Section adjourned at 1:00 o'clock.

Wednesday Afternoon Session

General Session

The Medical Society of Virginia met in the ballroom of the Monticello Hotel at three p. m., for its first general scientific session, with Dr. Alexander F. Robertson, Jr., of Staunton, Vice-President, presiding.

The paper of Drs. Wright Clarkson and Allen Barker, of Petersburg, on "Cancer Control" (illustrated), was read by Dr. Clarkson and was discussed by Dr. J. Shelton Horsley, of Richmond.

Dr. Raymond Kimbrough, of Norfolk, read his paper entitled "Dermatoses and Cold Weather," which was discussed by Dr. D. C. Smith, University.

The following four papers were read as a Symposium on Therapy:

"Treatment of Acute Respiratory Diseases," by Dr. F. C. Rinker, Norfolk.

"Treatment of Acute Infections of the Upper Urinary Tract," by Dr. Joseph F. Geisinger, Richmond.

"The Treatment of the Toxemias of Pregnancy," by Dr. T. J. Williams, University.

"A More Rational Treatment for the Mental Patient," by Dr. H. C. Henry, Petersburg.

The papers comprising the Symposium were discussed by Drs. J. C. King, Radford; A. I. Dodson, Richmond; C. J. Andrews, Norfolk; F. O. Plunkett, Lynchburg; James K. Hall, Richmond; and Claiborne T. Jones, Petersburg; and in closing by Dr. Geisinger and Dr. Williams.

Dr. James K. Hall moved that Dr. Henry's paper, "A More Rational Treatment for the Mental Patient," be released to the press of the State, with a request for publication, and this motion was seconded and carried.

The program having been completed, the Society adjourned at five-thirty o'clock p. m.

Wednesday Evening Session

The Society met in the ballroom of the Monticello Hotel and was called to order at eight-ten o'clock p. m. by the President, Dr. Francis H. Smith.

President Smith read the following telegram:

"Jacksonville, Fla., Oct. 16, 1935.

Dr. F. H. Smith, President,
Medical Society of Virginia,
in Annual Meeting Assembled,
Norfolk, Virginia.

Greetings and good wishes. I hope you are having a most successful annual meeting. We want to have a large number of your good Virginia doctors with us at our St. Louis meeting next month. Fraternally yours.

H. Marshall Taylor, President,
Southern Medical Association."

The paper of Drs. E. C. Drash, University, and J. B. Nicholls, Catawba Sanatorium, entitled "The Problem of Pleural Adhesions in Pulmonary Tuberculosis" (illustrated), was read by Dr. Drash and was discussed by Drs. I. A. Bigger, Richmond; C. W. Scott, Newport News; and Dean B. Cole, Richmond.

President Smith introduced the next speaker, Dr. James E. Paullin, as follows:

PRESIDENT SMITH: As I remarked to you last night, it is the pleasure and privilege of your Society to invite two and only two guests to this meeting. I introduced to you last night Dr. Arthur C. Christie. Tonight it is my pleasure to introduce another distinguished guest, Dr. James E. Paullin, Professor of Clinical Medicine at Emory University, Atlanta, and Chief of Medicine of Grady Hospital, Atlanta. He was a Major in the Medical Corps of the United States Army during the late unpleasantness, and he is now President of the Medical Association of Georgia. For my own gratification, I am glad to tell you he is a Democrat and a Presbyterian. I shall not tell you where I got that information, but I am glad to introduce Dr. Paullin. His subject is "The Significance and Diagnostic Importance of Pain in Disease."

Dr. James E. Paullin, Atlanta, Ga. (*invited guest*), read his paper entitled "The Significance and Diagnostic Importance of Pain in Disease."

Dr. C. L. Harrell, Norfolk, read his paper entitled "Suppurative Condition of the Lung Treated by Artificial Pneumothorax," which was illustrated by lantern slides. The paper was discussed by Dr. C. W. Scott, of Newport News, and by Dr. Harrell, in closing.

Dr. R. Finley Gayle, Jr., of Richmond, read his paper on "Fever Therapy in Neurosyphilis," which was discussed by Dr. J. A. Shield, of Richmond, and by Dr. Gayle in closing.

Dr. P. E. Thornhill, of Norfolk, read his paper entitled "External Version in the Eighth Month for Breech Presentations," which was discussed by Drs. Waverly R. Payne, of Newport News, and G. B. Byrd, of Norfolk, and in closing by the author.

The program having been completed, the evening session then adjourned.

Thursday Morning Session

The Medical Society of Virginia met for its last session in the ballroom of the Monticello Hotel on Thursday morning, October 17, 1935, and was called to order by the President, Dr. Francis H. Smith, at nine-fifteen a. m.

Dr. Oscar Swineford, Jr., of University, read his paper entitled "Observations on History Taking in Allergy," which was discussed by Dr. Emily Gardner, of Richmond.

Dr. W. Ambrose McGee, Richmond, read his paper on "The Management of The Allergic Individual," which was discussed by Dr. Oscar Swineford, Jr., of University, and by Dr. McGee in closing.

Dr. F. M. Hodges, Richmond, read his paper entitled "The Results of Roentgen Treatment of Some Very Advanced Malignancies," which was discussed by Dr. Vincent Archer, of University, and by Dr. Hodges in closing.

Dr. W. W. Waddell, Jr., of University, read his paper entitled "An Outbreak of Anterior Poliomyelitis in Charlottesville and Albemarle County, Virginia"; and the paper of Drs. Howard R. Masters and Lee E. Sutton, of Richmond, entitled "Poliomyelitis: Diagnosis of the Varieties," was read by Dr. Sutton. These two papers were discussed by Drs. Wyndham B. Blanton, Richmond; Andrew Hart, University; Alexander Gilliam, of the United States Public Health Service; Alexander F. Robertson, Jr., Staunton; I. C. Riggin, Richmond; B. H. Kyle, Lynchburg; by Dr. Waddell; by Dr. Gilliam again; and in closing by Dr. Waddell and Dr. Masters.

The paper of Drs. E. E. Barksdale and D. C. Smith, of Charlottesville, on "The Diagnosis of Early Syphilis," was read by Dr. Smith and was discussed by Dr. Lawernce T. Price, of Richmond.

At the conclusion of the scientific program, the President called for the report of the House of Delegates, which was read by the Secretary, Miss Agnes V. Edwards.

PRESIDENT SMITH: The by-laws provide that this report be made to this Society but that no action shall be taken upon it. In other words, it is final.

Now for me comes the most interesting part of the proceedings, when I shall lay my burden down. Dr. Moncure, will you stand, please. I do not believe, if we had searched the whole Society over, we could have found a prettier example than this of before and after taking

the presidential cure. I am reminded of an inscription upon a tombstone, Dr. Moncure:

"As I am now, so you will be;
Remember this, and think of me."

Of course, I am merely joking.

Dr. Moncure, you will find, after your year in the presidency, that Virginia doctors can be led but they cannot ever be driven. If you will adopt as the text and motto of your administration, "I am among you as one that serveth," you will find Virginia doctors always loyal, always cooperative, even though you cannot always get them to agree with you.

I feel perfectly confident in surrendering the presidency to Dr. Philip St. L. Moncure, of Norfolk. I congratulate you, sir.

DR. PHILIP ST. L. MONCURE: As has been said by every president that I have ever seen inducted into office (they always say this), "It is the extreme moment of my life, the acme of my medical career." That is a very good get-off.

In taking over this gavel, the symbol of authority, I hope and promise that I shall always use it discreetly and with judgment. If I should fail to do so, I know you well enough that you will set me right, and I insist that you do it. This Society is not mine; it is ours. It is an instrument of great power and force, used rightly; and I hope that we shall not abuse it but that we shall continue to make it a very powerful institution in our midst for both the medical fraternity and for humanity generally. As President, I am in your hands; I am simply your agent to do your will.

I now, without further ado, assume the office of President and ask for any business that may be before you. Is there anything further to come up? If not, I will name the Standing Committees, as follows:

(The numbers after names indicate the length of term of office as one member of each Standing Committee, except the Department of Clinical and Medical Education, is named by the incoming President for a term of three years).

COMMITTEES

PUBLICATION AND PROGRAM: Dr. Wyndham B. Blanton (2), *Chairman;* Dr. H. A. Tabb (1); Dr. H. B. Mulholland (3).

SCIENTIFIC EXHIBITS AND CLINICS: Dr. C. Bruce Morton (1), *Chairman;* Dr. J. D. Willis (2); Dr. W. Ambrose McGee (3).

DEPARTMENT OF CLINICAL AND MEDICAL EDUCATION: Dr. F. H. Smith, *Chairman;* Dr. I. C. Riggin; Dr. J. C. Flippin; Dr. Lee E. Sutton; Dr. G. F. Simpson; Dr. H. C. Henry.

LEGISLATION: Dr. Frank S. Johns (1), *Chairman;* Dr. H. T. Smith (2); Dr. Robert J. Payne (3).

MEDICAL ECONOMICS: Dr. W. B. Martin (3), *Chairman;* Dr. A. F. Robertson (2); Dr. C. O. Dearmont (1).

MEMBERSHIP: Dr. J. A. White (2), *Chairman;* Dr. A. W. Hammond (1); Dr. Isaac Peirce (3).

ETHICS: Dr. J. C. Flippin (1), *Chairman;* Dr. W. R. Williams (2); Dr. P. W. Miles (3).

I have not determined upon the personnel of the special committees. There have been many requests that special committees be named, but I do not believe in a multiplicity of committees. We have enough to do the work. We want, however, to extend the influence of the Society as much as possible, and if creating committees will help us to that end, all right. Often people like to see their names in print. There are some committees other than the standing committees, which are very important. The personnel of those will be published in the December JOURNAL.

Is there any other business? Any resolutions to be offered, or any new business to be taken up at this time?

If not, a motion to adjourn is in order.

On motion, the Society adjourned, at twelve-twenty-five o'clock p. m., *sine die.*

The following are OTHER COMMITTEES named by Dr. Moncure following the close of the annual meeting:

ADVISORY BOARD TO WOMAN'S AUXILIARY: Dr. J. Allison Hodges, *Chairman;* Dr. Southgate Leigh; Dr. Fletcher J. Wright.

TO ADMINISTER TRUST FUND FOR POSTGRADUATE CLINICAL EDUCATION: Dr. Frank H. Smith, *Chairman;* Dr. R. D. Bates; Dr. J. C. Flippin; Dr. I. C. Harrison; Dr. J. A. Hodges.

CHILD WELFARE: Dr. W. P. Jackson, *Chairman;* Dr. L. T. Royster; Dr. F. D. Wilson; Dr. C. E. Conrad; Dr. R. D. Bates; Dr. J. B. Stone; Dr. P. W. Miles.

WALTER REED COMMISSION: Dr. Clarence Porter Jones, *Chairman;* Dr. O. T. Amory; Dr. James D. Clements.

TO ARRANGE PROGRAM FOR HEALTH DIVISION OF THE VIRGINIA CONFERENCE OF SOCIAL WORK: Dr. Hugh H. Trout, *Chairman;* Dr. Carrington Williams; Dr. Wyndham Blanton; Dr. Greer Baughman; Dr. Wm. H. Higgins; Dr. Harrison Picot; Dr. Samuel Anderson; Dr. Basil Jones; Dr. Fred P. Fletcher, Jr.; Dr. Franklin D. Wilson; Dr. C. Lydon Harrell; Dr. W. P. Jackson; Dr. A. M. Showalter.

MATERNAL WELFARE: Dr. T. J. Williams, *Chairman;* Dr. C. J. Andrews; Dr. Greer Baughman; Dr. J. O. Boyd; Dr. F. O. Plunkett.

BUSINESS SESSIONS

Council

The Council of the Medical Society of Virginia met in the Monticello Hotel, Norfolk, Va., Tuesday, October 15th, at 10:00 A. M.

Present: The President, Dr. F. H. Smith, Abingdon, who presided; the President-Elect, Dr. P. St. L. Moncure, Norfolk; the following Councilors, Drs. Griffin W. Holland, Eastville; Julian L. Rawls, Norfolk; Roshier W. Miller, Richmond; Wright Clarkson, Petersburg; C. O. Dearmont, White Post; J. E. Knight, Warrenton; and C. B. Bowyer, Stonega; and the Secretary, Miss Agnes Edwards, Richmond.

It was stated that the doctors of Culpeper County had organized and wished a charter from the State Society. Dr. Knight, councilor for this county, said that

he was very glad that they had organized, and moved that the charter be granted. Seconded and carried.

The budget as prepared by Drs. Clarkson and Roshier Miller was explained by Dr. Clarkson and after discussion was approved. One important change in the budget was an allowance of $100 instead of the $25.00 allotted the President for the past several years, and an appropriation of $50.00 to the President-Elect, that these officers may be in a position to visit more of the component societies with a view of interesting them in the work of our organization. The Committee had increased the appropriation for the VIRGINIA MEDICAL MONTHLY by $250.00 and upon their suggestion, it was moved and carried that an additional $250.00 be allowed later in the year, provided receipts from the journal justify this expense.

Dr. Clarkson said that from time to time the Society might have funds available for investment and he thought it would be well for the Council to give the Budget Committee authority to invest such moneys without awaiting a meeting of the Council. It was moved that the Commitee be empowered to invest such funds as necessary.

In specifying the appropriation for the work of the Walter Reed Commission, an inquiry brought out the fact that no one knows who is holding the deed to this property. The Secretary was, therefore, instructed to secure this deed to be placed in the Society's lock box in the bank.

The minutes of the mid-winter meeting of the Council as printed in the October issue of the MONTHLY (pages 393-4) were approved.

Reports from the Councilors not calling for any special action, the meeting adjourned.

AGNES V. EDWARDS, *Secretary.*

House of Delegates

The first meeting of the House of Delegates was held in the Monticello Hotel, Norfolk, Va., Tuesday, October 15th, at 11:15 A. M., with the President, Dr. F. H. Smith, Abingdon, presiding.

Roll call showed a quorum present.

The minutes of the last annual meeting as published in the November, 1934, issue of the MONTHLY were approved, as also the report of the mid-winter meeting of the Council.

The reports, published in the October, 1935, issue of the MONTHLY, were next in order for consideration.

Delegates to the American Medical Association (pages 394-5). This report was ordered received and filed.

The report of the *Executive Secretary-Treasurer* (page 395) was accepted, with the following supplement:

At the time of our meeting in 1934, we had a membership of 1,830. Since then, we have enrolled 68 new members and lost 17 by resignation, 13 for non-payment of dues, and 38 by death, making our total enrollment at this time still 1,830.

The *Auditor's Report* of our financial condition immediately follows the minutes.

Publication and Program (page 395). Accepted.

Scientific Exhibits and Clinics (pages 395-6). Accepted.

Department of Clinical and Medical Education (pages 396-9). Received and filed.

Legislation (page 399). Accepted.

Medical Economics (pages 399-402). It was moved and carried that this report be received and filed for later action, that the Chairman might be present to explain certain points brought out in the report.

Membership (page 402). Adopted.

Ethics (page 402). In the discussion following this report, the question was asked if a member who had been expelled by his local society should be automatically expelled by the State Society, and it was the opinion of the Chairman that such was the case. In view of this opinion, it was moved and carried that such a member be expelled from the State Society.

Walter Reed Commission (pages 402-3). Accepted.

Group Societies (page 403). Received and filed.

Advisory Board to Woman's Auxiliary (page 403). Accepted.

To Administer Trust Fund for Postgraduate Clinical Education (page 403). Accepted.

Child Welfare (pages 403-4). Dr. W. E. Brown, superintendent of Blue Ridge Sanatorium, explained the part of the report with regard to the high death rate from tuberculosis in Virginia by stating that in 1928 the State Board of Health adopted resolutions giving preference to cases who come from homes where small children are exposed, thereby jeopardizing the health of the coming generation. This has caused a slowing up in the turn-over of patients because as these cases are usually advanced, they cannot be cured quickly.

In the absence of the Chairman, Dr. F. D. Wilson, a member of the Committee, presented the following supplementary report, which had been presented to Governor Peery by the State Child Conservation Committee through its Executive Committee:

A STUDY OF CERTAIN EXISTING CONDITIONS IN THE STATE OF VIRGINIA WITH SPECIFIC RECOMMENDATIONS

The State Child Conservation Committee, through its Executive Committee, composed of the Chairmen of the Child Hygiene and Child Welfare Committees from the following State-wide organizations, the Virginia Tu-

berculosis Association, the Medical Society of Virginia, the Virginia Pediatric Society, the Virginia Education Association, the Cooperative Education Association, Virginia Branch of the National Congress of Parents and Teachers, and the State Superintendents Association, respectfully presents to the Honorable George C. Peery, Governor of Virginia, for his consideration, certain serious conditions in the State which affect the safety of all citizens, the welfare of many thousands, and which will bring, inevitably, greatly increased and unnecessary tax burdens if permitted to continue, hindering the best development of the State.

These "certain serious conditions," shown in the facts and figures presented below, have been determined by careful studies of data from the most reliable sources, and the recommendations adopted unanimously by the entire Committee, were prepared after serious consideration by those especially fitted to make these studies and recommendations. Furthermore, this Committee has no particular interests or affiliations, represents a very large body of taxpayers, and is only concerned as these conditions affect the safety and welfare of Virginia people and particularly Virginia children.

This Committee believes that the following fundamental and basic health problems must be considered and dealt with, not only for the protection of the people as a whole, but, also, in order that our educational, welfare, mental hygiene, and health projects may continue to develop as they should:

1. Virginia has the third highest death rate from tuberculosis in the Southern States, and, excluding the District of Columbia and the so-called "death resort" states, the fourth highest in the United States. Virginia is not keeping up the average rate of decline in this death rate; virtually all the states, including the Southern States, are cutting down the tuberculosis death rate much faster than Virginia.

2. Approximately 2,000 people die annually in Virginia from tuberculosis, a preventable and curable disease. Virginia's case rate is not declining. Though many of the new cases reported may be due to better case finding, yet, in 1933, there were 1,690 more cases in the State than in 1932—certainly an indication of the growing seriousness of this problem.

3. In 1933 there were nearly 1,000 more deaths from tuberculosis than we had available beds, both State and private. Virginia has only about sixty beds for tubercular white children, and no beds for colored children with active or open cases.

4. In 1931-33 the greatest reduction in State Health Budgets was in tuberculosis prevention.

5. Owing to the scarcity of available and free beds, the slow intake of patients at the Sanatoria, the slow "turn-over" of patients in the Sanatoria, active tuberculosis cases in large numbers, untrained and without proper medical care, continue to spread infection for the perpetuation of our problem.

6. According to estimates secured from the State Health Department there are approximately 50,000 new venereal disease infections annually in Virginia.

7. The State has no funds appropriated for a State program of control of this disease, though a large proportion of State-supported defectives are the direct result of this disease.

8. The Virginia Commission for the Blind estimates that 75,000 children in the State have eye defects needing the care of competent specialists, which, if untreated, will result in many instances in total blindness, and in serious handicaps educationally and vocationally.

9. Conservative studies indicate that there are 10,000 children in our schools in serious need of tonsil-adenoid operations, who cannot pay for these operations. Among these, and also those having vision defects, are a large percentage, therefore, unable to advance in school.

10. We spend millions for all forms of education, yet nothing to see that our practicing physicians in the State are able to keep abreast of modern scientific developments.

Because of the financial difficulties of the present time, the State Child Conservation Committee does not ask that sufficient funds be appropriated by the State for the complete elimination of the above-mentioned problems immediately. The complete and idealistic solution of these problems would require an immediate investment of several millions each year. Though we know of no better investment in practical idealism even for the expenditure of such a sum, yet we realize the wisdom of our State-governing authorities in living within the State income. We do question, however, the wisdom of the large expenditures in many fields, needless to enumerate, if these expenditures are made at the expense of the safety of all citizens, and the possible rehabilitation of many thousands, who, otherwise, have to be State-supported in our asylums, our tuberculosis sanatoria, our schools for the blind, and on our relief rolls.

That Virginia may no longer remain in the opprobrious position she now holds in tuberculosis control, venereal disease control, and the health of her people generally, the State Child Conservation Committee respectfully begs the Governor of Virginia to include in his Recommendation and Budget, to be presented to the next General Assembly, for minimum programs to hold these problems safely within bounds, the following carefully considered sums of money, for the specific purposes and agencies indicated, as follows:

Tuberculosis Control, State Health Department	$100,000
Venereal Disease Control, State Health Department	30,000
Sight-Saving, Virginia Commission for Blind	10,000
Tonsils-Adenoids, State Health Department	35,000
Immunizations, State Health Department	10,000
	$185,000

And in the event that Federal Funds do not make a postgraduate service to practicing physicians available—

Postgraduate service, Medical Colleges	12,000
	$197,000

Dr. C. H. Peterson then presented the following resolutions:

WHEREAS: The Medical Society of Virginia realizes the serious problems confronting Virginia in tuberculosis control, venereal disease control, and the correction of remediable retarding defects in school children, and, whereas:

The State Child Conservation Committee has made important and constructive recommendations regarding the needed appropriations for the more adequate control of these problems; therefore,

BE IT RESOLVED: That the Medical Society of Virginia requests the Governor of Virginia and the members of the State Legislature to make the suggested appropriations at the next General Assembly.

BE IT RESOLVED, also, that copies of these resolutions be sent the Governor of Virginia, and the members of the Legislature.

It was moved, seconded and carried that the original report, as published in the MONTHLY, be received and filed.

To answer questions about how the work is to be conducted, for which the appropriations are asked, Dr. I. C. Riggin, State Health Commissioner, was given the privilege of the floor. He stated that there was some question in his mind as to how the *tonsil and adenoid* appropriation should be expended but he felt that this would not infringe upon the rights of physicians but would expand the work of the public health department. Personally, he felt that it should be paid for hospital service and not for physicians' fees. The plan would have to be worked out with the local medical societies and hospital groups. The fund for *tuberculosis* control would be used to extend facilities at the State institutions. He stated that there was no fund for *venereal disease* control in the State at this time and he believed this would materially help the physicians by being used to supply free arsenicals to them. The State Health Department would, of course, have nothing to do with the *sight-saving* as this would be handled by the Virginia Commission for the Blind. The amount allotted for *immunization* would be used to supply material to physicians for indigent children.

Dr. R. D. Bates moved that the resolutions accompanying the supplementary report be adopted. This was seconded.

A discussion brought out the fact that some of the members felt this work could be done better locally, possibly through the County Board of Supervisors.

Dr. F. D. Wilson said that the ideal situation would be to have this work handled by the local agencies but they have not done it heretofore. He felt that the Society should place itself on record as favoring the suggested appropriations, because if they did not the work would probably be undertaken by lay organizations.

Dr. J. C. Flippin said this question was brought to the attention of the Department of Clinical and Medical Education at a meeting in June and at that time it was thought wise not to take any step until it was known what would be done by the National Government as Congress was then in session, and it seemed likely at that time that a Federal appropriation for health work might be available, depending upon State support. Naturally it was felt it would not be wise for the medical profession to put any proposition before the Budget Committee of Virginia that was not absolutely sound. While he did not feel that chances for this appropriation were good he thought that the Society did not want to be put in the position of not cooperating when the subject was presented. It is certainly a work for the State Department of Health rather than the State Department of Education as it is better for medical affairs to be entrusted to a medical organization than a lay organization.

The resolutions, being put to vote, were adopted.

In connection with this report, Dr. R. D. Bates, Chairman of the Department of Clinical and Medical Education, presented the following suggestions, supplementary to the report from that Department (pages 396-9):

As retiring Chairman of this Department, a suggestion to the House of Delegates as to the future activities of this Department may be added to the report of work accomplished. If this very important function of the Medical Society of Virginia is to continue, it is absolutely essential that some regular source of income for the carrying on of this work be provided. It may be stated here that since our report to this body was written, a meeting of the Department has been held, at which it was decided to accept the offer of the Child Conservation Committee, to include in their application to the Governor funds with which to carry on Postgraduate instruction. This was done after it was found that there was no probable chance of securing funds from the Federal Government for this purpose.

It is suggested to the House of Delegates that they might ask the Legislature to make an annual appropriation for this purpose of sufficient size, along with the appropriation to the two Medical Schools, to carry on this work and that this sum be divided equally between the two schools, to be administered by them under the supervision of the Department of Clinical and Medical Education. This would be a strictly educational appropriation and is equally as important, if not more so, as the education of the under-graduate—certainly from the standpoint of its importance to the Public Welfare. Some such plan should be endorsed by the powers that be, because of its importance to the child welfare work as well as to the general public welfare. This suggestion is presented to you as the result of some thought given to this subject and by a realization of the importance of postgraduate instruction to the public as well as to the doctor.

It was moved and carried that this be received and filed.

At this time, Dr. Southgate Leigh, who was not present when his report as Chairman of the Committee on Group Societies was called, presented the following supplementary report which was ordered received and filed:

With your kind permission, I would like to say a few words in addition to the report of our committee.

We have been much impressed with the interest shown in our efforts by the younger members of the profession. I believe they feel strongly that we are passing through critical times and must take heroic action. The remarks made by our President at a Richmond meeting were, however, most discouraging, to the effect that he found a great deal of apathy among the members of the society in regard to taking protective action. To my mind our only safeguard will come through close and individual cooperation.

The American Medical Association has taken the most positive steps against State medicine but great pressure is being brought on the profession to institute plans for various forms of medical insurance which will lead promptly to the government practice of medicine.

I would sound a solemn note of warning that unless the profession becomes promptly aroused our splendid organization will become disorganized and eventually destroyed.

By prompt action there is much that can be done. Your delegates have a solemn duty to perform. You must become thoroughly aroused and at this meeting take steps to inform and organize every doctor in Virginia. With such an organization this State at least will be safe.

The next order of business being the naming of the *Nominating Committee,* a recess was taken that the delegates from the various districts might make their selections. This resulted as follows:

1st District—Dr. R. D. Bates.
2nd District—Dr. W. B. Martin.
3rd District—Dr. F. D. Fletcher.
4th District—Dr. R. A. Moore.
5th District—Dr. I. C. Harrison.
6th District—Dr. F. A. Farmer.
7th District—Dr. Frank Tappan.
8th District—Dr. Percy Harris.
9th District—Dr. George A. Wright.

The President then asked the Committee to be prepared to present nominations for the officers of the Society at the afternoon session, following which the meeting adjourned.

Afternoon Session

The second meeting of the House of Delegates was held at 2:30 P. M., on Tuesday, October 15th, with the President presiding.

A quorum being present, the first order of business was the presentation of the *budget* which had been approved by the Council. This was read by Dr. R. W. Miller and was adopted.

The next subject for consideration was the report of the *Medical Economics Committee* (pages 399-402) which had been deferred until this time. It was moved and seconded that this be adopted. Questions being asked about the Washington Plan referred to in the report, it was stated that this resolution does not bind the Medical Society of Virginia to set up such a project but the plan was offered as a model.

Dr. Carrington Williams moved that the words "approve the principles of" be substituted for the word "adopt," making section 1 of the second resolution read: "1. That the Medical Society of Virginia approve the principles of the Washington, D. C., plan," etc.

Dr. Moncure moved that the word "compulsory" be inserted in the third line of the first resolution before the word "group," making that part read: *"Therefore, be it resolved,* that the Medical Society of Virginia reaffirm its stand taken in 1933 of opposing any general scheme of compulsory group payment for medical care," etc.

The report was then adopted as amended.

Under new business, the following resolution from the Hanover Medical Society was presented:

WHEREAS the incidence of syphilis is certainly not on the wane,

And WHEREAS this very obvious condition is an indictment of the medical profession, both because of inadequate publicity and because of imperfect methods of dealing with the problem,

THEREFORE BE IT RESOLVED by the Hanover Medical Society that the Legislative Committee of the Virginia Medical Society be requested to present to the next meeting of the State Legislature a bill that will embody the following items:

(1) All chemicals in the treatment of all cases of syphilis be furnished free by the State.

(2) The State pay the physician not less than ten dollars for treating each indigent syphilitic.

(3) Every syphilitic shall be treated and controlled by his own physician or the one of his choice, health officers and social nurses cooperating.

(4) To care for flagrant violators of proscribed regimen and defiant syphilitics by proper State Ordinances.

(5) That it shall be the legal duty and legal privilege of attending physician to locate all contacts of syphilitics treated.

BE IT RESOLVED FURTHER that these resolutions be spread upon the Minutes of the meeting at which they may be adopted; that a copy be sent to the Legislative Committee of the Virginia Medical Society and at the appropriate time the members of the House and the Senators be requested to support what bill the Legislative Committee may offer that may be reasonable.

A. C. RAY,
A. C. RAY, JR.

This was ordered referred to the Legislative Committee.

Resolutions from the Mid-Tidewater Medical Society were read as follows:

WHEREAS, It has been brought to the attention of the Mid-Tidewater Medical Society, composed of the counties of Essex, Middlesex, Gloucester, Mathews, York, New Kent, King William and King and Queen, that the clinics at the Medical College of Virginia and at the

University of Virginia are treating many cases that are not indigent:

BE IT RESOLVED, That the Mid-Tidewater Medical Society asks the cooperation of these two clinics in checking this unfair and uncalled for competition, and that a requirement for treatment shall be a written request from the family doctor, before receiving treatment:

FURTHER, BE IT RESOLVED, That a copy of this resolution be sent to the head of each clinic and a copy be reported to the Medical Society of Virginia publication.

It was moved and carried that these be received and filed.

The Hampton Roads Chemists' Club of Norfolk had sent the following for the attention of the Society:

WHEREAS, The Hampton Roads Chemists' Club has long realized the importance of correcting the pollution evils which exist throughout the State, and especially in Hampton Roads and adjacent waters, because,

First, Of the economic loss to the Virginia seafood industry,

Secondly, The real menace to the health of these communities, and,

Thirdly, The resulting harmful effects on tourist and resort traffic, which is rapidly becoming a major asset to this State, and,

WHEREAS, The City of Norfolk has submitted to the Federal Authorities a list of outstanding needs of this community, among which is an item calling for expenditure of $3,500,000 for the construction of suitable sewage disposal plants and certain other expenditures for the correction of pollution in said waters, and

WHEREAS, The preservation of the States' great seafood industry, within these waters, and the maintenance of their purity is a matter of National importance, which the City of Norfolk is not in a financial position to protect, now, therefore,

BE IT RESOLVED, That The Hampton Roads Chemists' Club hereby express its deep interest in this matter, and urges continued action on the part of the City of Norfolk, pledging its earnest support and cooperation to the desired end, and,

BE IT FURTHER RESOLVED, That copies of this resolution be sent to, City Manager of Norfolk, Norfolk City Council, Norfolk Association of Commerce, Norfolk Medical Society, Norfolk County Medical Society, Isaac Walton League, The Governor of Virginia, Members of the House of Representatives and State Senators of Virginia, Virginia Medical Society, Virginia Academy of Science, Virginian Section of American Chemical Society, Virginia Blue Ridge Section of American Chemical Society, The President of the United States, the Congressmen and United States Senators of Virginia and to the Press, requesting that they, individually and collectively lend their support toward the solution of this problem.

After a discussion, it was moved and carried that these resolutions be adopted.

The annual report of the President of the Woman's Auxiliary given below was then read:

MR. PRESIDENT, MEMBERS OF THE MEDICAL SOCIETY OF VIRGINIA:

I herewith present the annual report of the Woman's Auxiliary for the year ending October 10, 1935.

We have tried to concentrate mainly in the organization of new auxiliaries. Since the meeting in Alexandria we beg leave to report the addition of one more—Auxiliary to Princess Anne County Medical Society, organized April, 1935. At present we have nine Auxiliaries which comprises twenty-five counties, and also one Junior Auxiliary.

Our Committees correspond almost identically to those of the National Auxiliary. Regular meetings are held by all Auxiliaries; many of them meet in conjunction with their respective County Medical Society. At each meeting a definite educational program is carried out stressing health education. The chairman of Program and Health Education has provided all Auxiliaries with study envelopes and suggestions for program material, emphasizing particularly, yearly health examinations and the study of National and County health laws. Each county chairman has been supplied with several copies of the handbook and at least one copy of the "First Twelve Years," an historical sketch of the Auxiliary published by the Woman's Auxiliary to the American Medical Association.

Two Executive Board meetings have been held, one at the State Meeting in Alexandria, October, 1934, and the other in Richmond, March, 1935, both had almost 100 per cent attendance. The last Board meeting will be held Wednesday, October 16th, 9:00 A. M. in Norfolk.

The Chairman of Legislation reports that no progressive laws concerning health were passed at the last session of legislature but recommends three laws in which the Auxiliary should be vitally interested:

1. More interest and stricter enforcement of sterilization law.
2. Legal dissemination of birth control information.
3. Wassermann tests to be done in the public schools.

Various types of public relations work have proven of great service. In Norfolk, the Auxiliary participated in a Public Relations tea with the Woman's Club and had as their speakers, two physicians. A card party and dance was held which netted over $300.00 to be used in their philanthropic work.

The Auxiliary in Petersburg has as its project furnishing supplies for the Petersburg Hospital and also entertaining physicians at County meetings. At a recent tea and shower, hospital linens and supplies were donated. Churches and other organizations cooperated with this group and gifts in the amount of $300.00 were realized.

The Auxiliary to Mid-Tidewater Medical Society, which comprises eight counties, holds a meeting every three months. This Auxiliary furnishes a Loan Closet, consisting of articles for hospital and home and supplies necessary in caring for the sick which physicians in the rural districts have found of great service for indigent patients.

The Alexandria Auxiliary entertained members and delegates at the State Meeting there last October. Books

and paints have been contributed to Library of Day Nursery and linens furnished for Alexandria Hospital.

Auxiliary to Lynchburg Academy of Medicine contributes to the milk fund in a local school and supplies food and shoes to needy children. Books in the Braille System are being purchased for the blind.

Auxiliary to James City and New Kent Counties meets every two months. Cooperates with King's Daughters, Red Cross, Parent-Teachers' Association, Woman's Club and Tuberculosis Association.

Noteworthy work is being done by the Warwick County Auxiliary in furnishing layettes and supplies for new mothers. It sponsors prenatal educational work and cooperates with a committee to their group in Hampton. Most of the meetings are held in Newport News.

Auxiliary to Richmond Academy of Medicine holds one meeting per month followed by program. A sum is given monthly to the milk fund in public schools. Has aided the Outpatient Department of the Medical College of Virginia in furnishing glasses and dental work for indigent patients. Books are donated the children's hospitals and children are remembered with gifts at Christmas and Easter. A story telling committee also functions at this Hospital. Contribution has been given to the pathological museum of Richmond Academy of Medicine. Committees served in clerical work of early tuberculosis diagnosis campaign. Assisted local physicians committee in sponsoring and arranging programs and radio talks for Mother's Day. A card party was held in May the proceeds of which will be used for philanthropic purposes. A member was delegate to S. M. A. meeting held in San Antonio in November. She gave a stimulating report of activities and we were especially proud of the retiring President, Mrs. Southgate Leigh, Norfolk.

The Virginia Beach group launched a campaign to provide hospitalization for their county indigent. Recently, the Princess Anne County Board of Supervisors appropriated $600.00 to cover a period of six months for this work. This was a splendid achievement for a newly organized group.

The Historian and Chairman of Archives has elaborated upon and compiled new data for medical history of our State and a fireproof cabinet has been purchased for all valuable records and placed in the Academy of Medicine Building in Richmond.

Chairman of Program and Health Education cooperated with the Maternity Center Association of New York in sponsoring programs for Mother's Day in each Auxiliary throughout the State. Speakers were furnished for meetings at Parent-Teachers' Associations, churches and various clubs. A telegram from the State President was sent to this association on Mother's Day commending the work they are accomplishing in reducing the maternity death rate in this country. A reply of appreciation was received from headquarters.

The Chairman of Exhibits is arranging to have an interesting display depicting projects of various Auxiliaries. This work warrants your inspection and I trust members of the Medical Society will visit this booth.

Hygeia has been stressed by the President and Committee Chairman. Many Auxiliaries use it for program material.

The Treasurer reports a paid-up membership of two hundred and twelve for 1935 and thirty-four members have paid dues in arrears for 1934.

I have visited many Auxiliaries during the year. These trips have been most interesting and served as an inspiration for further service in their behalf. Attended annual meeting of Auxiliary to District of Columbia Medical Society held in Washington in May. Represented the Auxiliary at the last meeting of Auxiliary to American Medical Association, in Atlantic City, June, 1935.

Am grateful to editors of VIRGINIA MEDICAL MONTHLY for space in each issue for Auxiliary news and take this opportunity to thank Miss Agnes Edwards, Executive Secretary of the Medical Society, for her courtesy and ever-ready cooperation.

In conclusion, permit me to thank the President and members of our Advisory Council for their unfailing interest, guidance and council.

Respectfully submitted,

(MRS. JOSEPH) KATE C. BEAR,

President, Woman's Auxiliary to the Medical Society of Virginia.

This was ordered received and filed.

Dr. F. P. Fletcher, who took an active part in the program of the health division of the Virginia Conference of Social Work held last April, presented a resolution as follows:

RESOLVED that the President appoint a committee to arrange the program for the health division of the annual meeting of the Virginia Conference of Social Work.

This was seconded and adopted.

The House voted that letters be sent by the Secretary to Dr. J. A. White and Dr. J. Allison Hodges, of Richmond, and Dr. Isaac Peirce, of Tazewell, expressing the regret of this body at their absence, with the hope that they would be with them another year.

The President asked consent of the House of Delegates to depart from the ruling of the By-Laws and have the Councilors elected at this meeting, as it seemed useless to carry over meetings of the House to another day for only this purpose. The House consented to this arrangement.

The report of the Nominating Committee was then received as follows:

President-Elect—Dr. J. Morrison Hutcheson, Richmond.

Vice-Presidents—Dr. C. L. Harrell, Norfolk; Dr. E. M. Chitwood, Wytheville; Dr. J. A. Owen, Turbeville

Secretary-Treasurer—Miss Agnes Edwards, Richmond.

It was moved and carried that the nominations be closed and the report accepted.

Delegates to the American Medical Association were next elected by ballot which resulted in the selection of Dr. J. C. Flippin, University, and Dr. Walter B. Martin,

Norfolk, as delegates for a term of two years, and Dr. Carrington Williams, Richmond, and Dr. I. C. Harrison, Danville, as alternates for the same time. Dr. Wright Clarkson, Petersburg, holds over as a delegate, and Dr. R. W. Miller, Richmond, as alternate.

A recess was taken that the members from the odd-numbered districts might elect their Councilors for a term of two years. These were named as follows:

1st District—Dr. Griffin Holland, Eastville.
3rd District—Dr. R. W. Miller, Richmond.
5th District—Dr. B. F. Eckles, Galax.
7th District—Dr. C. O. Dearmont, White Post.
9th District—Dr. C. B. Bowyer, Stonega.

A most cordial invitation was extended from the Augusta County Medical Society for the State Society to meet in Staunton in 1936, and this was accepted.

Upon motion of Dr. F. P. Fletcher, the House of Delegates gave the Norfolk County Medical Society a rising vote of thanks for their entertainment of the Society.

There being no further business, the House adjourned.

AGNES V. EDWARDS, *Secretary.*

Auditor's Report—October 1, 1934, Through September 30, 1935

TO THE OFFICERS AND COUNCILORS,
MEDICAL SOCIETY OF VIRGINIA,
RICHMOND, VIRGINIA.

GENTLEMEN:

We have made an examination of the books of account of the MEDICAL SOCIETY OF VIRGINIA, RICHMOND, VIRGINIA, for the fiscal year ended September 30, 1935, and submit herewith our report, consisting of the following financial statements and related comments:

EXHIBITS

"A" Balance Sheet
"B" Cash Receipts and Disbursements

Comments

A summary of the financial condition at September 30, 1935, compared with a similar tabulation as of September 30, 1934, shows:

	9-30-35	9-30-34	Increase
Cash	$2,824.33	$ 910.07	$1,914.26
Accounts Receivable	2,779.74	2,880.75	101.01*
Investments—Bonds (At Cost)	1,857.50	2,250.00	392.50*
Total Assets	$7,461.57	$6,040.82	$1,420.75
Less: Accounts Payable	459.22	1,002.49	543.27*
Net Worth	$7,002.35	$5,038.33	$1,964.02

The Cash Receipts and Disbursements for the current year are set forth in *Exhibit "B."* The Income and Expenses for the year, on a cash receipts and disbursements basis may be briefly stated as follows:

INCOME:	*Actual*	*Budget*
Medical Society	$ 4,732.60	$ 4,433.00
Medical Monthly Publication	9,334.34	8,800.00
Totals	$14,066.94	$13,233.00
EXPENSES:		
Medical Society	$ 4,196.70	$ 4,433.00
Medical Monthly Publication	8,363.71	8,800.00
Totals	$12,560.41	$13,233.00
Surplus Income for Year	$ 1,506.53	$ ------

*Decrease.

The increase of $1,914.26 in cash balance during the year is accounted for as follows:

Surplus Income (Above)	$1,506.53
Liquidating Payments on Bonds Owned	400.00
Contributions to Special Trust Fund	15.23
	$1,921.76
Less: Cost in Reinvestment of Bonds	7.50
Increase During Year	$1,914.26
Cash Balance Beginning of Year	910.07
Cash Balance End of Year	$2,824.33

We would recommend that the Surplus Income of $1,506.53, as stated above, together with the $400.00 received from liquidating payments on bonds owned, be invested in bonds in order to provide a more substantial sum as an emergency, or reserve, fund. Expenditure appropriations for the ensuing year should not be in excess of estimated revenues, based upon a conservative estimate.

We checked in detail the cash receipts and disbursements of record and established by direct communication with the First & Merchants National Bank, Richmond, Virginia, the funds on deposit. Securities owned, as listed on the balance sheet, were verified by inspection.

The amounts owing by members for dues, and accounts due for advertising in and subscriptions to the MEDICAL MONTHLY, are shown at collectible values, as estimated by the Secretary-Treasurer. No attempt was made to verify these by direct communication with debtors. The Secretary-Treasurer stated that there were no outstanding liabilities at September 30, 1935, other than those shown on the Balance Sheet, *Exhibit "A."*

Insurance protection in force consists of—

Fire—Office Furniture and Fixtures	$1,000.00
Fire—Walter Reed Home, Belroi, Virginia	1,000.00
Fidelity Bond—Secretary-Treasurer	3,000.00

Respectfully submitted,
A. M. PULLEN & Co.,
Certified Public Accountants.

Balance Sheet—September 30, 1935
Exhibit "A"

ASSETS

CASH (EXHIBIT "B"):		
On Deposit—First & Merchants National Bank:		
Checking Account	$2,325.31	
Savings Account	499.02	
		$2,824.33
DUES FROM MEMBERS: (Estimated Collectible Value)		
1935 Annual Dues—390 @ $5.00 each		1,950.00

ACCOUNTS RECEIVABLE:		
VIRGINIA MEDICAL MONTHLY:		
For advertising	$ 779.74	
For subscriptions	50.00	
		$29.74
SECURITIES OWNED:		
Bonds—Home Owners' Loan Corp. 2¾% (Par $1,500.00)	$1,507.50	
Collateral Trust Bonds (At Par)	$1,000.00	
Less: Liquidating Dividends	650.00	350.00
		1,857.50
Total Assets		$7,461.57

LIABILITIES		
ACCOUNTS PAYABLE:		
For preparation of Medical Journal	$ 443.99	
RESERVE FOR SPECIAL FUND:		
Postgraduate Education	15.23	
		$ 459.22
SURPLUS:		
Excess of Assets over Liabilities		7,002.35
Total Liabilities and Surplus		$7,461.57

Cash Receipts and Disbursements

For the Year Ending September 30, 1935

Exhibit "B"

RECEIPTS	*Actual*	*Budget*
MEDICAL SOCIETY OF VIRGINIA:		
Dues—Members	$ 4,608.11	
Interest on Securities and Savings A/c (½)	68.24	
Royalties on History of Medicine	56.25	
Totals—Medical Society	$ 4,732.60	$ 4,433.00

DISBURSEMENTS	*Actual*	*Budget*
MEDICAL SOCIETY OF VIRGINIA:		
Salaries (Apportioned):		
Secretary-Treasurer $1,620.00		
Clerical Assistance 660.00		
	$ 2,280.00	$ 2,280.00
Rent and Telephone	349.55	350.00
Stationery and Office Supplies	69.12	80.00
Postage	217.21	260.00
Reporting Annual Meeting	146.13	180.00
Badges	33.75	40.00
Programs and Envelopes	66.00	68.00
Repairs and Replacements—Office Equipment	34.80	25.00
Audit Fee (Apportioned)	26.67	30.00
President's Expenses	47.46	25.00
Councilors' and Officers' Expenses	36.45	75.00
Attorney's Fee	500.00	500.00
Bank Service Charges and Check Tax	13.72	———
Interest on $500.00 Loan	2.56	———
Miscellaneous Expense	16.21	35.00
Department of Clinical and Medical Education	250.00	250.00
Walter Reed Commission	43.85	55.00
Committee on Scientific Work and Clinics	38.27	50.00
Committee on Child Welfare	1.20	5.00
Committee on Medical Economics	5.00	5.00
Constitution and By-Laws (Printing)	18.75	50.00
Committee on Maternal Welfare	———	5.00
Expense of Invited Guests	———	60.00
Group Societies	———	5.00
Totals—Medical Society	$ 4,196.70	$ 4,433.00

Receipts and Disbursements—*Continued*

VIRGINIA MEDICAL MONTHLY:			VIRGINIA MEDICAL MONTHLY:		
Advertising		$ 5,784.56	Salaries (Apportioned):		
Subscriptions:			Secretary-Treasurer	$1,620.00	
Members	$3,072.07		Clerical Assistance	660.00	
Non-members	409.47	3,481.54		$ 2,280.00	$ 2,280.00
Interest on Securities and Savings A/c (½)		68.24	Preparation of Journal (including Cost of Distribution	5,596.59	6,000.00
			Rent and Telephone	340.57	350.00
			Repairs and Replacements—Office Equipment	34.80	25.00
			Stationery and Office Supplies	28.08	35.00
			Office Postage	47.20	50.00
			Audit Fee (Apportioned)	26.66	30.00
			Miscellaneous Expense	9.81	30.00
Totals—MEDICAL MONTHLY		$ 9,334.34	$ 8.800.00	$ 8,363.71	$ 8,800.00
Grand Totals		$14,066.94	$13,233.00	$12,560.41	$13,233.00
OTHER RECEIPTS:			OTHER DISBURSEMENTS:		
Liquidating Dividends on Mortgage Bonds Owned		$ 400.00	Bonds Purchased ($1,500.00 Par)	$1,507.50	
Contributions to Special Fund for Postgraduate Education	$15.00		Less: Bonds Called and Redeemed	1,500.00	
Add: Interest Earned	.23	15.23		$ 7.50	
Total Cash Receipts		$14,482.17	Total Cash Disbursements		$12,567.91
CASH BALANCE—OCTOBER 1, 1934		910.07	CASH BALANCE—SEPTEMBER 30, 1935 (Exhibit "A")		2,824.33
		$15,392.24			$15,392.24

Public Health Statistics

I. C. RIGGIN, M. D.
State Health Commissioner of Virginia

The communicable disease reports received at the office of Dr. G. F. McGinnes, State Epidemiologist, for the month of October, 1935, show the following cases compared with the same month in 1934:

	1935	*1934*
Typhoid and Paratyphoid	55	78
Diphtheria	279	458
Scarlet Fever	250	425
Measles	29	222
Meningitis	8	6
Poliomyelitis	19	14
Rocky Mountain Spotted Fever	0	0
Typhus Fever	0	0
Undulant Fever	2	4
Tularaemia	4	1
Smallpox	0	11

A casual glance at the cases of communicable diseases reported to the State Health Department for the month of October reveals a decided decrease in the number of typhoid and paratyphoid, diphtheria, scarlet fever and measles cases compared with the same month in 1934. In reviewing the number of cases of each of these diseases reported in October during the past twenty-five years, the decrease appears even more striking. For typhoid and paratyphoid, diphtheria and measles the incidence is the lowest on record (for this month) and for scarlet fever the lowest since 1918.

In contrast to this decrease the reported cases of meningitis, poliomyelitis and tularaemia are slightly above the average. In view of the unusual prevalence of poliomyelitis this past summer it is not surprising that the incidence is still slightly above normal. As previously stated, as long as there is unusual concentration of men in C.C.C. and transient camps one may expect a slight increase in the number of cases of meningitis. The number of reported cases of tularaemia is in keeping with the recent prediction of a slightly high incidence of tularaemia this winter.

The apparently marked decrease in smallpox in 1935 compared with October, 1934, is not significant, for the eleven cases reported in 1934 were confined to an outbreak in Washington County.

Woman's Auxiliary to the Medical Society of Va.

President—MRS. FLETCHER J. WRIGHT, 49 S. Market St., Petersburg.
President-Elect—MRS. F. D. WILSON, 5352 Studley Ave., Norfolk.
Corresponding Secretary—MRS. MEADE EDMUNDS, Walnut Hill, Petersburg.
Recording Secretary—MRS. HAROLD W. POTTER, 70 33rd St., Newport News.
Treasurer—MRS. REUBEN F. SIMMS, 2502 Hawthorne Ave., Richmond.

The Thirteenth Annual Meeting of the Woman's Auxiliary to the Medical Society of Virginia was held in Norfolk, October 15 to 17, 1935. Of singular interest was the fact that the Virginia Auxiliary was founded thirteen years ago in the very same room in the Monticello Hotel in which the 1935 meetings were held. One hundred and forty-seven members and guests registered; of these there were twenty-one Board Members and seven County Presidents.

The Pre-Convention Board Meeting was called to order at 9:00 A. M. Wednesday, October 16th by the President, Mrs. Joseph Bear, of Richmond, and at the close of this Executive Board Session, the General Meeting convened at 10:45 A. M. Mrs. Eugene Lowenberg, President of the Norfolk Auxiliary, brought greetings, and extended a cordial welcome to the visitors. Mrs. Bear then presented the guest of honor, Mrs. Rogers N. Herbert, of Nashville, Tenn., President of the Auxiliary to the American Medical Association. Mrs. Herbert brought a message of inspiration and encouragement from the National Auxiliary.

Mrs. Bear made her annual report as President covering the year's work, and this was followed by reports from Chairmen of Standing Committees and County Presidents. These reports all gave evidence of the splendid amount of work undertaken and accomplished in various sections of the State, and all were accepted with a rising vote of thanks and appreciation by the membership.

All of the resolutions of the Executive Board were ratified in the general meeting, and action will be taken upon advice of the Advisory Council. One of the resolutions recommended more interest in and a stricter enforcement of the Sterilization Law; another recommended legal dissemination of Birth Control information; and another that Wassermann Tests be given in Public Schools. Also that periodic health examinations of school children be made in the office of the family physician in preference to mass clinics.

It was also advocated that a day known as "Doctor's Day" be set aside throughout the State, to commemorate the memory or notable achievement of some member of the Medical Profession in the State.

Mrs. Allison Hodges, Chairman of the Nominating Committee, brought in the following slate of officers for the coming year:

President—Mrs. Fletcher J. Wright, Petersburg.
President-Elect—Mrs. Franklin D. Wilson, Norfolk.
Vice-Presidents—Mrs. Llewellyn Powell, Alexandria; Mrs. Hawes Campbell, Ventor; Mrs. A. G. Shetter, Richmond.
Recording Secretary—Mrs. Harold W. Potter, Newport News.
Corresponding Secretary—Mrs. Meade Edmunds, Petersburg.
Treasurer—Mrs. Reuben F. Simms, Richmond.

At the close of the meeting Mrs. Bear presented to Mrs. Fletcher J. Wright, the incoming President, a beautiful leather brief case as a token of her interest in and affection for the auxiliary.

The Post-Convention Board Meeting was held at the Monticello Hotel, Wednesday night at 8:30, and presided over by Mrs. Wright. At this time Standing Committee Chairmen were appointed, and plans were formulated for the work of the coming year.

Special commendation should be given to those responsible for the exhibits on display. These illustrated in a concrete way the activities of the local auxiliaries. They were both colorful and educational, and should prove a source of inspiration for future annual meetings.

A most delightful social program was provided by the Norfolk Auxiliary. The round of entertainments began with a luncheon on Wednesday, October 16th, at the Norfolk Country Club. This was followed by a drive through the Naval Base and a tour of the Marine Hospital. At the end of the drive, tea was served at the Colonial House, also known as the Myers Home, a lovely old residence furnished with rare and beautiful antiques. Wednesday evening a delightful reception, buffet sup-

per and dance was held at the Ghent Club, honoring the incoming and outgoing Presidents of the Medical Society of Virginia and of the Auxiliary to the Medical Society of Virginia.

Thursday morning a golf tournament was held for the visiting women golf enthusiasts, and this was followed by an Oyster Roast at Lynnhaven Bay.

An "at home" feeling prevailed among all visitors throughout the Convention. This was not due entirely to the fact that Norfolk is the birthplace of the Auxiliary, but because of the cordial spirit and friendly hospitality which was shown by the Norfolk hostesses. The memory of the thirteenth meeting of the auxiliary, held in Norfolk, the Mother city, will long be treasured in the minds of all who attended.

Truth About Medicine

In addition to the articles previously enumerated the following have been accepted by the Council on Pharmacy and Chemistry of the A. M. A.:

E. R. Squibb & Sons

Ipral Sodium Tablets, ¾ grain.

Ipral Sodium Tablets, 2 grains.

The following product has been accepted for inclusion in the List of Articles and Brands Accepted by the Council but not Described in N. N. R. (New and Nonofficial Remedies, 1935, p. 445):

Eli Lilly & Co.

Lubricating Jelly-Lilly.

PROPAGANDA FOR REFORM

The Connell Cancer Cure.—In Kingston, Ont., Dr. Hendry C. Connell, an assistant professor at Queen's University Faculty of Medicine, has announced a new treatment for cancer. It has been heralded by the press as a "cancer cure." Kingston has turned over part of its municipal hall for the enlargement of his research work and the Department of Health of the Ontario government is collecting cancer tissue from all parts of Canada so that Dr. Connell can use it in making up his preparation. He calls it "Ensol." The background of this performance is said to be some experiments made by Dr. Connell four years ago in an attempt to control cataract. He claims to have developed a substance which would break down cataractous lens tissue without reacting on other proteins. By a similar process, he says, he developed an enzyme which would break down cancer tissue. In a letter to *The Journal of the American Medical Association,* Dr. Connell stated that he had promised to submit a complete statement of his work to the *Canadian Medical Association Journal* and requested the American Medical Association to send a representative to witness his results. He also submitted a statement alleged to be an account of the method of preparation of his product and an account of his results, which include merely some regression of cancer tissue. The methods pursued by Dr. Connell in promotion of his product reveals procedures more like those of the charlatan than of the scientific investigator. Moreover, his statement of the method of preparation of his product is so incomplete and confused as to make duplication of his work impossible. The results he claims are similar to those which have been obtained with a half-dozen other methods. In a few cases there are apparently temporary remissions due to damage of the blood vessels in the tumor. Results just as good occur with the methods used by most of the cancer quacks. There does not appear to be any real evidence that an anti-tumor enzyme is present in the mixture. Notwithstanding these considerations, newspapers have heralded widely Dr. Connell's claims. Great numbers of sufferers from cancer have been stimulated to false hopes. Time is the true tester of cancer cures—yet newspapers continue to lead cancer sufferers to promoters of cancer cures that have been tested only a few weeks or months. If Dr. Connell really realized his responsibility he would have waited to inform the newspapers until he knew whether or not his "discovery" actually had merit. (*J. A. M. A.*, October 5, 1935, p. 1122.)

Standardization and Labeling of Liver and Stomach Preparations for Use in the Treatment of Pernicious Anemia.—The following statement concerning the standardization of liver and stomach preparations has been adopted by the Council: Standardization of preparations depends on the reticulocyte response following the uniform daily administration of the product to a patient with pernicious anemia. The test patient should preferably have no complicating infection, diarrhea, marked arteriosclerosis or extensive neurologic changes. The red blood cell count should be between 1,000,000 and 3,000,000 per cubic millimeter and the patient should not be in a spontaneous or induced remission, nor should transfusion have been performed recently. The patient should not have received potent anti-anemic material or arsenic within a month. Daily reticulocyte counts for one day before and for ten days after the test has been started should be made. During days of marked rise of reticulocytes, two counts a day may be necessary to determine the maximal value. The acceptable standard response is set forth in the accompanying table.

Initial Red Blood Count Million per Cu. Mm.	Minimum Reticulocyte Response Per Cent
1.0	30
1.5	18
2.0	12
2.5	7
3.0	4

The figures given have been obtained by the daily oral administration of material derived from 300 to 400 gm. of liver, or of 30 to 40 gm. of desiccated stomach, or by the daily parenteral injection of material derived from 10 to 15 gm. of liver. The test should be conducted by

uniform daily administration for ten days of the least amount of material expected to yield the standard reticulocyte response. Should there be no reticulocyte response or a lesser response than the required minimum, within the ten-day period, that amount of a preparation of established potency known to correspond to the foregoing standards should be administered in uniform dosage for ten days. The purpose of this control is to establish the reactivity of the patient to known amounts of active principle. In assaying an orally administered product an orally administered standard should be used, and with a product for parenteral use a parenterally administered standard should be employed. The principles underlying the determination of potency of autolyzed liver preparations, stomach tissue extracts or combinations of liver and stomach tissue or extracts are the same. In each case the least daily amount of the preparation administered that is necessary to produce the standard reticulocyte response within the ten-day period should be determined. This daily amount serves as a basis for labeling. Satisfactory responses to similar tests should be obtained in at least three patients. (*J. A. M. A.*, October 19, 1935, p. 1269.)

Vitamin D in Common Foods.—The sources of vitamin D or vitamin D effects are now so easily available and so widely distributed that the question of an adequate supply would hardly seem to concern greatly any average American. Nevertheless, pediatricians who see constantly the effects of an inadequate supply of vitamin D are inclined to deprecate the manner in which vitamin D is made available and in which it is used by the vast majority of people. A recent survey on the amounts of vitamin D in common foods indicates that, with the exception of egg yolk and butter, none of the ordinary foods contain any substantial amount of vitamin D. Few human beings in large Northern cities obtain any substantial amount of sunshine except possibly in summer. The main source of vitamin D must therefore come to the human being from exposure to ultraviolet rays, from natural sources of this vitamin or from extra vitamin D obtained through materials that have been enhanced in their vitamin D potency. Nutritional authorities believe that man has been deprived of the vitamin D that he used to get by natural methods and that insistence on an additional source of this vitamin will be for the benefit of mankind. Certainly, so far as the growing child is concerned, some additional vitamin D may be necessary everywhere. Quite recently the thought that an oversupply of vitamin D would be developed in this manner and that the eventual effects of this oversupply would be toxic has been reemphasized in various places. Thus far the evidence seems to indicate little likelihood of harm. (*J. A. M. A.*, October 26, 1935, p. 1354.)

Book Announcements

Modern Motherhood. A Book of Information on Complete Maternity Care: Prenatal—Delivery—Aftercare. By CLAUDE EDWIN HEATON, M. D., F. A. C. S. With an introduction by Hazel Corbin, Director of the Maternity Center Association. Farrar & Rinehart, Inc. New York. 1935. Octavo of 271-xix. Cloth. Price, $2.00 net.

This book contains 271 pages. It is well written, interesting to read, and the author has made a noteworthy contribution to the literature on childbirth for lay readers. In my opinion it should also be useful to physicians, medical students, and nurses.

In the preface the author states "An attempt is made in this book to give a frank presentation of our present knowledge of childbirth to lay readers particularly, expectant mothers.

Dr. Heaton has clearly outlined a modern standard for good maternity care and what the average patient expects of her physician. He has explained in a clear concise way many of the questions which expectant mothers often ask.

This book is worth recommending to women desiring literature on motherhood.

H. H. WARE, JR.

Maternal Mortality in Philadelphia. 1931-1933. Philadelphia County Medical Society. Report of Committee on Maternal Welfare. Philip F. Williams, M. D., Chairman. 1934. Octavo of 143 pages. Paper. Price, $1.00.

This report of Maternal Mortality in Philadelphia for three years contains many interesting facts. It is an honest attempt to classify correctly the puerperal deaths in Philadelphia. In discussing maternal deaths the committee states there are three groups:

1. Those cases in which death is directly due to pregnancy, labor or the puerperium.

2. Those cases in which pregnancy and labor were a contributing cause, but in which there was another primary cause.

3. Those deaths in which pregnancy and labor had no contributing effect.

Under "Preventability Due to Patient" the authors discuss certain conditions where the responsibility for the prevention of death should be assigned to the patient. Included in this group are self-induced abortions, severe toxemias and other grave diseases in which the patient refused early

interruption of pregnancy. Also those individuals who refused prenatal or hospital care.

The maternal death rate was 7.09 per thousand total births. Eliminating seventy-eight non-obstetrical causes of death and calculating the rate on live births, the puerperal death rate was 6.69 per thousand live births.

In one hospital there were 4,850 deliveries without a craniotomy but with a Caesarean Section incidence of 4.8 per cent. In another hospital with 1,423 deliveries there were twenty-two Caesarean Sections and three craniotomies.

Abortions accounted for a little more than 25 per cent of the maternal deaths.

The total death rate per thousand live births was 6.1 in white women and 7.2 in negro women.

H. H. WARE, JR.

A Marriage Manual. A Practical Guide-Book to Sex and Marriage. By HANNAH M. STONE, M. D., Medical Director of the Birth Control Clinical Research Bureau and of the Marriage Consultation Centers at the Community Church and Labor Temple, New York. And Abraham Stone, M. D., Adjunct Urologist at the Sydenham Hospital; Co-Director of the Marriage Consultation Centers at the Community Church and Labor Temple, New York. New York. Simon and Schuster. 1935. Octavo of 334-xi pages. Illustrated. Cloth. Price, $2.50.

Books on etiquette probably are necessary. This book on the etiquette of marriage or rather reproduction is based in the main upon sound physiological facts. Some of the figures are startling—for instance, that each ovary at birth contains several hundred thousand ova or that two to five hundred million spermatozoa are discharged at one time.

The book is gotten up in the form of answering the questions of two young persons contemplating matrimony. It is, however, arranged in a systematic manner and discusses fitness for marriage, the anatomy of the male and the female sex organs, the mechanism of reproduction, the prevention of conception, fertility, artificial insemination, compulsory and voluntary sterilization, abortions, the art of marriage, sexual disharmonies and health in marriage. It is hard to visualize such consultations, but if they become common it may be necessary for doctors to read the book so as to be able to answer the questions that may be asked them. So long as the authors stick to the known facts of physiology, one cannot take exception to what is said. The authors' discussion of premarital exercise of the sexual function is unfortunate. To bridge over the space between physiological maturity and the time when "economic security" permits of marriage the authors suggest a "Junior marriage" with economic independence of the contracting parties. At the expiration of a specified length of time or at the occurrence of a pregnancy, this union would automatically assume all aspects of our present form of marriage with full economic responsibility. This smacks of the Utopian ideas of some of our political economists. If it came to be socially acceptable I imagine many young couples would wake up to a realization that it was an economic trap.

M. P. RUCKER.

Public Health Administration in the United States. By WILSON G. SMILLIE, A. B., M. D., Dr. P. H., Professor of Public Health Administration, School of Public Health, Harvard University. New York. The Macmillan Company. 1935. Octavo of xvi-458 pages. Illustrated. Cloth.

This book deals with the beginning of public health in United States and the functions of a health organization—such as safe and adequate water supply; safe and adequate sewage disposal; food supply; garbage and refuse; housing and city planning; safeguards in protecting human life and the control of sources of disease transmission; laboratory service and vital statistics.

"No subject is more intimately connected with the happiness and prosperity of a people than the degree of public health they enjoy." (Lemuel Shattuck, "A Census of the City of Boston." 1845.)

This book is replete with information on all subjects pertaining to public health. There are chapters on the administrative control of communicable diseases, including that of diphtheria, typhoid, tuberculosis, venereal disease, poliomyelitis and many others.

There are chapters devoted to the basic activities of a health organization, the organization of public health programs, which includes such information as the date of establishment of the various health departments, health education, small city set-up, as well as a rural one.

To my mind this is a book which should be read and studied, not only by those actively engaged in the public health field, the private practitioner, but various welfare organizations as well.

C. L. OUTLAND.

The Individual Criminal. Studies in the Psychogenetics of Crime. By BEN KARPMAN, M. D., Psychotherapist, St. Elizabeth's Hospital, Washington, D. C.; Professor of Psychiatry, School of Medicine, Howard University, Washington, D. C. *Volume One.* Cases 1-5. Copyright, 1935. Nervous and Mental Disease Publishing Company, 3617 Tenth Street, N. W., Washington, D. C. Octavo of ix-317 pages and charts. Cloth. Price, $4.50.

Frequently during the past quarter century, psychiatrists, penologists, judges and probation officers have raised the question: Is delinquency a disease, a symptom complex, or only a symptom common to many diseases?

In the previously published, "Case Studies in the Psychopathology of Crime," (giving the life stories of five criminals), Dr. Karpman presented a source reference in delinquency. In our review of this book we voiced the opinion that its value would depend largely upon the excellence of a companion volume, "The Individual Criminal," which the author stated would be shortly forthcoming.

In "The Individual Criminal" now presented, the author parallels essentially the previous book, giving an excellent discussion and adequate interpretations in the case of each of the five criminals studied.

The author shows the part played by broken home situations, the social milieu of the criminal and other factors such as emotional entanglements, jealousy, revenge, insecurity, lack of emotional emancipation, etc.

Some may take issue with the author's conclusion that crime itself does not appear to be just a "psychopathy," but it arises on the basis of a highly specific form of neurosis.

The author closes the book with suggestions regarding the psychotherapeutic approach to the criminal personality, and other measures leading to social rehabilitation of the delinquent.

One might say about Dr. Karpman's studies in crime that in the first volume a promise was made; in this book it has been amply fulfilled.

HARVIE DEJ. COGHILL.

Books Available to Doctors.

Recent acquisitions to the Library, Medical College of Virginia, Richmond, as well as other books, may be borrowed for a limited time, by members of the profession in Virginia, the only charge being return postage:

Aykroyd, W. R.—Three philosophies (Lavoisier, Priestley, and Cavendish).

Balderston, L. R.—Housekeeping workbook.

Banister, H.—Psychology and health.

Barnard, W. G.—Technique of a post-mortem examination.

Beckman, H.—Treatment in general practice.

Blatz, W. E.—Nursery education, theory and practice.

Bridges, M. A.—Food and beverage analyses

Campbell, A.—Oxygen and carbon dioxide therapy.

Cantonnet and Filliozat—Strabismus.

Carrel, A.—Man, the unknown.

Chase, S.—Government in business.

Chayer—School nursing.

Colwell, H. A.—The method of action of radium and X-rays on living tissues.

Cowgill, G. R.—The vitamin B requirement of man.

Crew, H.—The rise of modern physics.

Cruickshank, J. N.—The toxaemias of pregnancy.

Curtman, L. J.—Qualitative chemical analysis.

Dandy, W. E.—Benign, encapsulated tumors in the lateral ventricles of the brain.

Dawson, S.—Intelligence and disease.

Dawson—Physiology of physical education.

Devereux, R. T.—Good food at low cost.

Dobell, C.—A report on the occurrence of intestinal protozoa in the inhabitants of Britain.

Feldman, W. M.—Biomathematics.

Fischel, M. K.—The spastic child.

Gerlach, W. & W.—Clinical and pathological applications.

Gesell & Thompson—Infant behavior.

Graham & Singer—Thoracic surgery.

Green, R.—Lectures on the development and use of the synthetic and anti-malarial drugs.

Greenwood—Epidemics and crowd-diseases.

Haggard & Greenberg—Diet and physical efficiency.

Haldane & Priestley—Respiration.

Hall, Sir D., et als.—The frustration of science.

Handbook of chemistry and physics, 20th ed.

Harrison, T. R.—Failure of circulation.

Hart, P. Darcy—The value of tuberculin tests in man with special reference to the intracutaneous test.

Harvard Group—Current economic policies.

Henderson, V.—Medical and surgical asepsis.

Hill, L., et als.—The Kata-thermometer in studies of body heat and efficiency.

Hinhede, M.—Gesundheit durch richtige und einfache Ernährung.

Hogben, L.—Nature and nurture.

Homans, J.—Textbook of surgery.

Jaquin, W. N.—Our revealing hands.

Jelliffe & White—Diseases of the nervous system, 6th ed.

Jones—Principles of guidance.

Kerr, D. J. A.—Forensic medicine.

Kerr, J. G.—Education and biology.

Kolthoff, I. M.—Colorimetric and potentiometric determination of pH.

Lacour, P. R.—Recherches sur la malaria-floculation de Henry.

Levin, L.—Living along with heart disease.

Liddell, H .S., et als.—The comparative physiology of the conditioned motor reflex.

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Editorial

What to Read.

The average young man passes from his medical school into the full stature of his professional life with the oft-repeated admonition ringing in his ears not to read textbooks but medical journals. With an air of superiority he puts old friends aside and begins to devour eagerly the contents of the several medical journals to which he has access. A few years later, if he takes stock of himself and of what he has read, it becomes apparent to him that much of it has lacked continuity, that there are gaps in his information, that many articles have been in the nature of preliminary reports whose final chapters have never been forthcoming, that there has been much that was never confirmed, much that was contradictory, much that was later disproved. America publishes more than half the medical journals of the world, and it requires considerable discrimination to read profitably among the hundreds of medical publications issued in this country alone.

The fallacy of reading too slavishly among medical journals ultimately becomes apparent to the seasoned practitioner, and he turns again to textbooks and systems of medicine. He is careful that they are recent publications and that their authors are men of established reputation. If every two or three years he reads through a textbook like Osler's *Principles and Practice of Medicine,* Musser's *Internal Medicine,* or Cecil's *Textbook of Medicine,* he will come upon many new facts, greatly enlarge his knowledge and fortify himself against the danger of too readily accepting what has not or will not stand the test of time. A good textbook read through and through offers the best guide to discriminating reading.

What Doctors Are Talking About.

The Fifty-second Annual Meeting of the American Clinical and Climatological Association, gathering recently at Princeton, N. J., was productive of contributions of considerable importance. Ralph H. Major, of Kansas City, demonstrated from clinical as well as experimental experience that insulin may be absorbed successfully and utilized when applied by spray to the nasal mucous membrane. This finding if confirmed by others represents an important advance in a hitherto fruitless search for some other manner of administration of insulin than by the hypodermic route. Major found that the nasal mucosa absorbed insulin when mixed with some glycerin-like substance. He employed mixtures of both ethylene-glycol and trimethylene-glycol with insulin.

Cyrus C. Sturgis of Ann Arbor summed up eight years of experience in the treatment of 577 cases of pernicious anemia. He stressed the usefulness of liver extract given intravenously or intramuscularly—an advance based on a better control of therapy and the convenience of infrequent treatment. In the

case of intravenous therapy, 20 c.c. of the extract every three or four weeks is sufficient to maintain the proper red cell and haemoglobin levels. He pointed out the indications for iron and transfusion in pernicious anemia therapy and gave it as his opinion that the administration of hydrochloric acid or attention to the general diet was of little moment. He pointed out that 50 per cent of the deaths from pernicious anemia were associated with spinal cord changes but could offer no better guide to therapy in this type of case than to give large doses of liver extract and to keep the red blood cell count well above five million.

William D. Stroud of Philadelphia reported an important comparative study on the potency of various new glucosids of digitalis, standardizing them against whole leaf preparations of digitalis. He reached the conclusion that Verotigen grains 1/240, Digitaline Nativelle grains 1/600, Digoxin grains 1/240, and the whole leaf preparation of digitalis grains 1½, are clinically of equal effect in slowing the heart and in relieving the usual symptoms of congestive heart failure.

L. W. Gorham of Albany pointing out the difficulty often encountered in a differential diagnosis between acute occlusion of the pulmonary and coronary arteries, stressed the importance of a history carefully reviewing the possible causes of pulmonary thrombi. He pointed out as valuable X-ray evidence the narrowing of the intercostal spaces, the unilateral high diaphragm and the shifting of the mediastinum to the affected side.

Robert L. Levy of New York in discussing sudden death in patients with coronary sclerosis and thrombosis, was of the opinion that coronary thrombosis was not the immediate cause of death. He attributed death to what he designated acute myocardial ischemia and cessation of cardiac activity. He thought the same mechanism was operative in sudden death in cases of aortic insufficiency—a diastolic pressure insufficient to prevent fatal myocardial ischemia.

Joseph H. Pratt of Boston called attention to the newer methods of gastric diagnosis, gastroscopy by the semi-flexible gastroscope, relief methods of gastric roentgenology using small amounts of barium and small aimed exposures, facilitating the visualization of the lining architecture of the stomach which is naturally disturbed early in gastric pathology.

Pulmonary diseases were discussed by a number of recent workers in this field, among them W. L. McCann and J. A. Miller. Attention was focused on pulmonary fibrosis and emphysema. Functional rather than anatomical methods of approach were emphasized and it was quite evident that a better understanding of diseases of the lungs is being sought through a better comprehension of the mechanism of pulmonary physiology.

The outstanding contribution was made by Charles H. Lawrence of Boston who reported striking results in the treatment of acne vulgaris obtained by the administration of an anterior pituitary like hormone. After reviewing some previous conceptions of acne and disposing of the infection theory by pointing out that it has been shown that the acne bacillus of Sabouraud is present in normal sebaceous material, Lawrence related the disease to endocrine disorders by noting its appearance at puberty in a large proportion of young people and its frequent improvement with correction of menstrual disorders. He began his studies with investigations of biopsy material taken from the skin of sufferers from acne and was able to demonstrate a striking hyperplasia of epithelial cells at the mouths of the ducts of the sebaceous glands with associated plugging of the ducts with inspissated material.

His clinical studies led him to seek for some association of acne with endocrine dysfunction. The Esterin assays of the urine in sufferers from acne was known to be low. In some of his cases genital hypoplasia could be demonstrated and in others there was a flat sugar tolerance curve indicative of hypopituitarism.

Assuming that acne was essentially an endocrine disturbance with obstructive hyperplasia of the epithelial cells of the ducts of the sebaceous glands associated with hypofunction of the anterior lobe of the pituitary, Lawrence began the treatment of acne with a hormone. The preparation he employed was Antuitrin S in 2 c.c. doses every second day. His results were on the whole excellent. Out of thirty cases treated, ten were cured and ten were improved. In one instance an extensive eruption with disfiguring cysts and comedones, which in other hands had long resisted X-ray and all local forms of treatment promptly yielded to pituitary extract.

Acne is said to afflict at least one-third of the youth of both sexes of the age of puberty. In many instances it becomes an embarrassing, often a disfiguring, disease, and any measure which will prove

more effective than our present therapeutic procedures will be welcomed.

Artificial Pneumothorax in Pneumonia.

Fifteen years ago Friedmann and David in Germany independently announced the results of artificial pneumothorax in the treatment of acute unilateral lobar pneumonia. At the time their results made very little impression and ten years elapsed before this method of treatment was again taken up. Within the last few years in this country and in Great Britain some two score reports have appeared in the literature. Altogether about two hundred cases of pneumonia have been reported as having been treated by this method. The method has now reached the stage where it is necessary to make some more definitive evaluation of its usefulness. There seems to be little doubt that air injected into the pleural space of a patient suffering with acute lobar pneumonia associated with pleurisy often miraculously relieves pain and cough and converts a pathetic sufferer into a comfortable patient able to sleep and to raise expectoration from his chest without more than ordinary discomfort. This in itself may be sufficient justification for the procedure, but still more important claims have been made for artificial pneumothorax in pneumonia. Artificial crisis frequently follows air administration. Temperature and leukocyte count fall and resolution rapidly follows. More careful immunological studies are needed in explanation of this phenomenon. Does compression of a diseased lung favorably affect the incidence of bacteremia through the slowing of the blood and lymph flow through the lungs, through immobilization and other factors? These and other related questions are yet to be answered. This much may be said. Cases need to be carefully selected with due regard to the location of the lesion, the duration of the disease, the activity of the process and the presence of complicating factors, and no one should undertake this type of treatment without realizing that of itself it carries certain elements of risk and that whereas it may affect astonishingly the course of pneumonia in the particular patient, it has not been shown by any means to affect the general mortality from the disease.

President's Message

New Committees and Other Work.

TO THE MEMBERS OF THE MEDICAL SOCIETY OF VIRGINIA:

There has never been a more revolutionary age in medicine than there is today.

My predecessor, Dr. F. H. Smith, has already sounded the keynote of the present trend of thought along the line of Medical Economics in his Message in the October issue of the JOURNAL. Social agencies everywhere are working to improve the social order; to teach us better how to live. The Virginia Conference of Social Work has undertaken to motivate the formation of the Virginia Welfare Council, whose activities are divided into:

Education and Recreation
Child Welfare
Family Welfare
Delinquency
Mental Hygiene
Public Health and *Medical Care.*

We are citizens of this great Commonwealth first, then physicians. We cannot shirk our duty to our country as citizens, hiding behind our professional title and taking no part in other phases of social service.

Social Service is defined, by Dr. James Bryant Corant, President of Harvard University as "A study of all phases of individual needs, and the service or ministration of those needs." We, therefore, have our responsibilities in every branch of social service as citizens; and we have our *special* responsibilities in our relation to Public Health and Medical Care—including child and maternal welfare, mental hygiene, and certain phases of criminology, on account of our *peculiar fitness.*

It is evident, therefore, that those sections of social welfare for which physicians by training are peculiarly fitted, should be under control of organized medicine—The Medical Society of Virginia.

Dr. Fred P. Fletcher, Jr., Chairman of the Health Division of the Virginia Conference of Social Work, presented at the meeting of the House of Delegates of the Society, October 16th, the following resolution: Resolved, that the President appoint a Com-

mittee to arrange the program for the Health Division of the annual meeting of the Virginia Conference of Social Work. This resolution was passed unanimously and as the meeting takes place in Roanoke in March, I am appointing this committee as follows:

Dr. Hugh H. Trout, *Chairman,* Roanoke.
Dr. Carrington Williams, Richmond.
Dr. Wyndham B. Blanton, Richmond.
Dr. Greer Baughman, Richmond.
Dr. Wm. H. Higgins, Richmond.
Dr. Harrison Picot, Richmond.
Dr. Samuel Anderson, Richmond.
Dr. Basil Jones, Richmond.
Dr. Fred P. Fletcher, Jr., Richmond.
Dr. Franklin D. Wilson, Norfolk.
Dr. C. Lydon Harrell, Norfolk.
Dr. W. P. Jackson, Roanoke.
Dr. A. M. Showalter, Christiansburg.

Dr. Smith recognized the need of medical supervision along this line of social service, when he appointed a large committee on Child Welfare which I am also appointing as follows:

Dr. W. P. Jackson, *Chairman,* Roanoke.
Dr. L. T. Royster, University.
Dr. F. D. Wilson, Norfolk.
Dr. C. E. Conrad, Harrisonburg.
Dr. R. D. Bates, Newtown.
Dr. J. B. Stone, Richmond.
Dr. P. W. Miles, Danville.

There has also been a demand that the Committee on Maternal Welfare be reappointed, and it has been brought out that greater interest in the society meetings and better papers can be gotten up, if we have a committee to look after this great branch of medicine.

I am therefore reintroducing this committee and naming it as follows:

Dr. T. J. Williams, *Chairman,* University.
Dr. C. J. Andrews, Norfolk.
Dr. Greer Baughman, Richmond.
Dr. J. O. Boyd, Roanoke.
Dr. F. O. Plunkett, Lynchburg.

Since our By-Laws lay down the following precept (Art. 7, section 2): Each Councilor shall be the organizer, advisor and censor for his district, and shall visit each component society in his district once a year: and since the President shall visit as many component societies as possible during the year in the interest of the Society; and since the Council and House of Delegates at the last session stressed the importance of the President and President-Elect visiting the component Societies—and even set aside a definite amount of money to help defray their expense for this purpose, I deem the appointment of a special committee on group societies entirely unnecessary. I will, therefore, not reappoint this committee.

Although we have no funds from outside sources as in times past to help us carry on our postgraduate work; and our own treasury is depleted, I hope the work so successfully begun a few years ago will be continued. These lectures and clinics have been carried on very successfully in other states at very little cost. And we are looking to our two great medical schools to point the way.

But money does not mean all in life. The greatest minds our country has ever produced if they did not actually scorn riches certainly did not let it influence them in their great work for humanity. We haven't the money but we have the brains and the will to carry on, and I am hoping for, and expecting great constructive work this year.

Our legislature meets in a short time; several bills are in the making for the improvement and benefit of our profession. We cannot get anywhere by sitting still and "letting George do it for us" or what is worse paying him to do it. Legislation, for our consideration, will be printed in this JOURNAL in due time, and it is up to us as individuals as well as organized component bodies to do our bit in explaining our needs and pointing out our necessities. I have always found our representatives more than glad to listen to us, and if our cause is just and we individually get down behind our bills we will get them through.

Effort is already under way to make our Society meetings more attractive, and it behooves each one of us to boost our Society. We must not leave it altogether to the Councilors, the President, and President-Elect.

Let us remember that every law for our protection, every privilege, every law for our safety and the protection of our patients and friends against the unscrupulous methods or practices of quacks and charlatans, was put on the statute books by the efforts of the organization which we are urged to uphold and work for.

P. ST. L. MONCURE, M. D.,
President, Medical Society of Virginia.

Department of Clinical and Medical Education of the Medical Society of Virginia

The sixteenth Postgraduate Clinic conducted by the Department of Medicine of the University of Virginia in cooperation with the Department of Clinical and Medical Education, was held at the University of Virginia Hospital on Friday, November 15th. High lights of the program were clinics by Dr. J. E. Wood on Pregnancy and Hypertension, Dr. V. W. Archer on Present-Day Treatment of Malignant Diseases, Dr. Staige D. Blackford on Indigestion, and Drs. J. C. Flippin and James R. Cash on Clinico-Pathological topics. The special feature was a surgical clinic by Dr. Carrington Williams, of Richmond.

The names and addresses of the *physicians* attending the clinic follow:

Dr. A. E. Turman, Richmond.
Dr. J. F. Thaxton, Tye River.
Dr. R. E. Booker, Lottsburg.
Dr. J. C. Coulter, Charlottesville.
Dr. H. G. Byrd, Louisa.
Dr. C. B. Fox, Monterey.
Dr. D. M. Kipps, Front Royal.
Dr. E. L. Grubbs, Front Royal.
Dr. W. O. Cox, St. Paul.
Dr. G. F. Simpson, Purcellville.
Dr. G. H. Musgrave, Leesburg.
Dr. H. L. Baptist, Ivy.
Dr. C. D. Bennett, Chatham.
Dr. Elizabeth B. Sherman, Front Royal.
Dr. O. W. Carper, Front Royal.
Dr. Anita Lotti, Charlottesville.
Dr. Glenn C. Campbell, Staunton.
Dr. C. P. Obenschain, Staunton.
Dr. G. R. Elliott, Orange.
Dr. C. M. Rice, Sweet Briar.
Dr. W. H. Turner, Round Hill.
Dr. Marshall J. Payne, Staunton.
Dr. J. E. Womack, Staunton.
Dr. H. J. Morton, Stuart's Draft.
Dr. R. S. Griffith, Basic City.
Dr. W. A. Kyger, Free Union.
Dr. John E. Cole, Fredericksburg.
Dr. T. W. Dew, Fredericksburg.
Dr. Carroll H. Iden, Berryville.
Dr. W. O. Smith, Altavista.
Dr. Frank Tappan, Berryville.
Dr. C. O. Dearmont, White Post.
Dr. R. F. Weems, Harrisonburg.
Dr. B. L. Carleton, Newport News.
Dr. C. W. Scott, Newport News.
Dr. R. L. Page, Batesville.
Dr. Carrington Williams, Richmond.
Dr. William Walker, Scottsville.
Dr. J. F. Stover, Doe Hill.
Dr. C. E. Watson, Broadway.
Dr. L. G. Roberts, Moorman's River.
Dr. H. F. White, Fishersville.
Dr. Elizabeth Cole, Norfolk.
Dr. Ruth Mason Grigg, Petersburg.

An appropriation was made by the Society, at its annual conference in Norfolk, to the Department of Clinical and Medical Education to carry forward its postgraduate program during the year. The work will go forward under the new chairman of the committee, Dr. F. H. Smith, of Abingdon, Va. Dr. Smith will be glad of suggestions for graduate clinics or other graduate educational activities.

GEORGE B. ZEHMER,
Executive Secretary.

Proceedings of Societies

Northern Neck Medical Association.

The semi-annual meeting of this association was held in Irvington, Va., on October 24th, with Dr. R. E. Booker, Lottsburg, president, presiding. There was a good attendance of members as well as doctors from other parts of the State. Officers elected at this time are: president Dr. Lee S. Liggan, Irvington; vice-presidents, Dr. M. C. Oldham, Lancaster, and Dr. C. Y. Griffith, Mt. Holly; and secretary-treasurer, Dr. E. T. Ames (re-elected), Montross.

The Culpeper County Medical Society

Is the latest addition to the component societies of the Medical Society of Virginia, having been organized by the doctors of that county at a meeting held in Culpeper, Va., on October 5th. Charter was granted this organization at the Norfolk meeting of the State Society. The following officers were elected for the ensuing year: President, Dr. D. W. Kelly, Jr., Culpeper; vice-president, Dr. J. E. Parks, Brandy; and secretary-treasurer, Dr. O. K. Burnette, Culpeper. Other charter members are: Dr. J. R. Boldridge, Rixeyville; Drs. H. T. Chelf, E. B. Dovell, Granville Eastham, and J. L. Stringfellow, all of Culpeper; and Dr. E. Y. Willis, Remington.

The Augusta County Medical Association

Held its regular quarterly meeting in Staunton on November 6th, and the following program was presented: "Considerations in the Nitrogen Content of the Blood" by Dr. T. R. Rolston, New Hope; "Factors in the Prevention of Suicide" by Dr. Rex Blankenship, Richmond; and "Chronic Constipation" by Dr. O. L. Hite, Richmond.

Dr. Guy Fisher, Staunton, was named chairman of the committee on arrangements for the meeting of the Medical Society of Virginia to be held in Staunton, in the Fall of 1936.

Dr. T. R. Rolston, New Hope, and Dr. Alexander F. Robertson, Staunton, are president and secretary, respectively, of this Association.

The Roanoke Academy of Medicine

Held its regular meeting on November 4th, with an attendance of about sixty members and ten visitors. Dr. J. Paul Kent, Roanoke, was elected to membership at this time. An interesting scientific program was given and also a report from the Norfolk meeting of the State Society. Dr. George S. Hurt and Dr. Blanton P. Seward, both of Roanoke, are president and secretary, respectively.

Fourth District Physicians Hold Meeting.

A meeting of the physicians of the fourth district of the Medical Society of Virginia was held, in conjunction with the Postgraduate Medical Society of Southern Virginia and the Department of Clinical and Medical Education of the State Society, in Petersburg, on November 12th, with the president, Dr. H. E. Whaley, Victoria, presiding.

The meeting was opened with a surgical clinic at the Petersburg Hospital conducted by Dr. J. Bolling Jones. This was followed by a review of the scientific exhibits by Drs. W. Ambrose McGee and A. I. Dodson, of Richmond, and Drs. Wright Clarkson and Allen Barker, Petersburg. A film on cancer control was shown by the American Society for the Control of Cancer. Papers were then presented by Dr. J. Shelton Horsley, Dr. J. B. Jones, Dr. T. S. Jennings, and Drs. T. G. Hardy and Ralph W. Jack.

A photograph contest was held before dinner and the meeting was closed with a business session.

Dr. C. E. Martin, Emporia, is secretary of the Postgraduate Society and Dr. Wright Clarkson, Petersburg, chairman of the steering committee.

South Piedmont Medical Society.

A meeting of this Society was held in South Boston, Va., on November 19th, with the president, Dr. J. J. Neal, Danville, presiding. About fifty members and guests were in attendance. A symposium on "Preventive Medicine" was presented, and papers were read by Dr. D. C. Steelsmith, Health Office, Halifax-Pittsylvania County Unit; Drs. F. R. Hopkins, C. H. Patterson, J. W. Devine, and D. P. Scott, of Lynchburg; Drs. D. C. Smith, and D. C. Wilson, of University; Drs. R. W. Garnett and Samuel Newman, of Danville; and Drs. Thomas Wheeldon and Robert Mazet, Jr., of Richmond.

Dr. J. A. Owen, Turbeville, is secretary of this Society.

The Petersburg (Va.) Medical Faculty,

At its annual meeting in November, elected the following officers for the ensuing year: President, Dr. William A. Reese; vice-presidents, Dr. W. Allen Barker and Dr. Mason Romaine; secretary-treasurer, Dr. Wilbur M. Bowman (re-elected). The court medicale which is composed of the president and the four past presidents now includes Dr. W. A. Reese, Dr. D. D. Willcox, Dr. W. B. McIlwaine, Dr Meade Edmunds, and Dr. Claiborne T. Jones. All are of Petersburg.

The Virginia Peninsula Academy of Medicine

Met on November 18th and there was an attendance of more than fifty doctors from the Virginia Peninsula. At this time, Dr. Charles R. Austrian, of the Johns Hopkins Medical School, spoke on "The Differential Diagnosis of Pulmonary Tuberculosis."

Dr. E. L. Alexander, Newport News, is president of the Academy, and Dr. Frank Bacon, Hampton, is secretary.

News Notes

Southern Medical Association.

At the annual meeting of this Association, held in St. Louis, November 19th-22nd, Dr. Fred M. Hodges, Richmond, Va., was elected President to succeed Dr. H. Marshall Taylor, Jacksonville, Fla. The vice-presidents elected are Dr. Quitman U. Newell, St. Louis, and Dr. Joseph E. Knighton, Shreveport; secretary-manager, Mr. C. P. Loranz, Birmingham (re-elected); and Dr. and Mrs. M. Y. Dabney, Birmingham, were also re-elected as editors of the *Southern Medical Journal.* Baltimore was selected as the place of the 1936 meeting.

The following Virginia doctors were made chairmen of sections: Dr. I. A. Bigger, Richmond, of section on surgery; Dr. Frank H. Redwood, Norfolk, of section on neurology and psychiatry; and Dr. Wm. B. Porter, Richmond, of section on medicine.

The Seaboard Medical Association

Meets at the Chamberlin Hotel, Old Point Comfort, December 3rd, 4th, and 5th, under the presidency of Dr. A. M. Burfoot, Fentress, Va. An interesting program has been prepared and a most cordial invitation has been extended all doctors and their families.

Postgraduate Course in Ophthalmology and Otolaryngology.

A series of lectures and clinics will be sponsored by the University of Virginia, at the request of the Virginia Society of Otolaryngology and Ophthalmology, December 2nd-7th, inclusive. These will be held in the amphitheater and operating rooms of the University Medical School and Hospital. In addition to prominent speakers from New York, Philadelphia, Grand Rapids, Mich., and Iowa City, Iowa, there will be several from University and Richmond.

The fee for the whole course is $25.00 or for the first or second half, $15.00 each. Those desiring to register should communicate with Dr. Fletcher D. Woodward, Box 1685, University, Va.

Group Hospitalization in Richmond.

The Richmond (Va.) Hospital Service Association has been licensed by the State Corporation Commission to sell contracts for this service in Richmond. It will be given by Stuart Circle, Johnston-Willis, St. Elizabeth's, Retreat for the Sick, and the Medical College of Virginia Hospitals. Requirements for this group hospitalization are that contracts may be sold to only 10,000 people in the city. The registration fee is $1.00 plus 85 cents a month. The service is available to employed persons, white and colored, male and female, provided they join in groups of not less than ten, representing not less than 40 per cent of the total number of employees at any establishment. The service provides twenty-one days of hospitalization in any one year in a two-bed room in any of the hospitals above named, when prescribed by the family physician or doctor attending the member. The service has flexibility so that those who wish privacy may obtain it by payment of the difference in the cost between single and double rooms.

The Association is composed of twenty-nine members, fifteen representing the five institutions giving the service and fourteen the business interests of the city. Mr. Thomas N. Boushall is president of the organization; Mr. T. N. Jones, vice-president; Dr. L. E. Jarrett, superintendent of the Hospital Division of the Medical College of Virginia, chairman of the Board of Directors, and Mr. M. Haskins Coleman, secretary and general manager. Mr. Coleman was for a number of years director of Johnston-Willis Hospital and is well fitted for this position. His offices are on the first floor of the Professional Building in Richmond.

Married.

Dr. William Durwood Suggs and Miss Grace Lorraine, both of Richmond, Va., November 2nd.

Dr. Thomas Stanley Meade and Miss Mary Belle Long, both of Richmond, Va., November 7th.

Dr. Jethro Meriwether Hurt, Blackstone, Va., and Miss Margaret Virginia Bennett, daughter of Mrs. Bennett and the late Dr. Wm. Wallace Bennett also of Blackstone, November 6th.

Dr. Herbert W. Lewis,

Dumbarton, Va., who was acutely ill in a Richmond hospital for two months and a half, returned home early in November and is now convalescing at his former home in Culpeper, Va.

Dr. Carrington Williams,

Richmond, Va., was elected secretary of the English-Speaking Union of this city, at its annual meeting in November.

Dr. V. L. Litsinger,

Farnham, Va., was elected a member of the executive committee for his district, at the annual meeting of the Richmond County Chapter of the American Red Cross.

Dr. N. P. Fitts,

Class of '29, Medical College of Virginia, recently of Maurertown, Va., has now located at Strasburg, Va.

Dr. Mulford Honored.

On October 31st, Dr. H. K. Mulford, Philadelphia, was honored with a dinner in celebration of his Golden Pharmaceutical Anniversary. Dr. Mulford was the first in this country to supply Diphtheria Antitoxin for use by the medical profession distributed through the pharmacist. He also perfected and patented the well-known crown tablet machine for making compressed tablets. The degree of Master of Science was conferred upon Dr. Mulford in 1918 and the highest honor in pharmacy, Doctor of Pharmacy, was conferred upon him by his Alma Mater in 1933. He is now Director of the Research and Biological Laboratories of the National Drug Company of Philadelphia.

Dr. Mildred B. Forman,

Class of '34, Medical College of Virginia, who finished her internship at the Montgomery Hospital, Norristown, Pa., in July and has since been studying at Johns Hopkins Hospital, Baltimore, has opened offices at 2812 Market Street, Wilmington, Del., for general practice.

Medical College of Virginia News.

Dr. Sidney S. Negus, professor of chemistry; Dr. Frank L. Apperly, professor of pathology; Dr. Harvey B. Haag, professor of pharmacology, and Dr. Lee E. Sutton, Jr., dean of the school of medicine, attended the annual meeting of the Association of American Medical Colleges in Toronto.

During the month of October 5,861 patient visits were made to the outpatient department by 2,756 individuals, an average of 217 patients per clinic day.

The contract for the foundation of the new clinic building has been awarded to A. H. Calligan and Company and excavation is under way. The new building, to cost about $550,000.00, equipped, is expected to be ready for occupancy by the first of January, 1937.

Dr. William B. Porter, professor of medicine; Dr. I. A. Bigger, professor of surgery, and Dr. Lee E. Sutton, Jr., dean of the school of medicine, are attending the annual meeting of the Southern Medical Association in Saint Louis. Dr. Sutton is giving a report on the five Saint Philip Hospital postgraduate clinics thus far conducted by the college for Negro physicians. Dr. Bigger is giving a paper on the Diagnosis of Heart Wounds. Dr. Porter is secretary of the medical section of the Association.

General Walter Drew McCaw, of Woodstock, New York, was a recent college visitor.

Dr. Samuel A. Eliot spoke to the student body on November 15th.

Two grants totalling $24,123.00 have been made by the Works Progress Administration to the college. Under these grants a tunnel will be constructed between the Egyptian Building and the Dooley Hospital; the old ampitheatre room in McGuire Hall will be converted into two stories, providing lecture rooms, laboratories, and offices. The allotments will also cover demolition of old

buildings, painting, and general repairs to college properties.

Dr. E. H. Ingersoll is making a series of motion pictures depicting present activities of the college, and showing interesting pictures of the past.

News from University of Virginia, Department of Medicine.

At the meeting of the University of Virginia Medical Society on October 21st, Dr. Staige D. Blackford read a paper on Chronic Duodenal Dilatation and Obstruction.

At the meeting of the Medical Society on November 4th, the following program was given by speakers from the Medical College of Virginia: Dr. I. A. Bigger, The Diagnosis and Localization of Wounds of the Heart; Dr. William B. Porter, The Cause of the Electrocardiographic Changes in Pericardial Effusion; Dr. Rolland Main, The Physiology of the Pericardium; and Dr. Paul Kimmelsteil, Intercapillary Glomerular Sclerosis.

On November 14th, Dr. Richard Cannon Eley, Instructor in Pediatrics and Communicable Diseases at Harvard Medical School, spoke before the Medical Society on the subject of The Treatment of Hemophilia with Placental Extracts.

Postgraduate Course in Gastrointestinal Diseases.

On October 31st, November 1st and 2nd, a postgraduate course in gastrointestinal diseases was held at Duke Hospital, Durham, N. C. Among those giving lectures were the following from Virginia: Dr. Hugh H. Trout, Roanoke; Dr. Walter B. Martin, Norfolk; Dr. Robert L. Payne, Norfolk; and Dr. J. Shelton Horsley, Richmond.

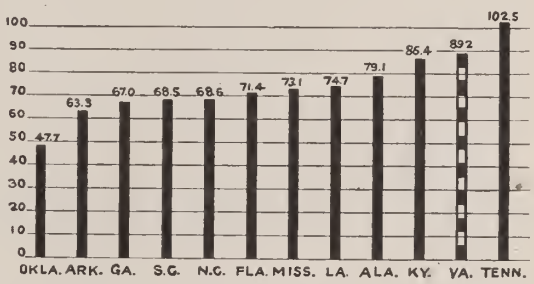
There were more than 550 doctors registered, many being from Virginia. In addition to those named above, the following names were reported to this office: Drs. L. E. Stubbs, J. W. Sayre, E. B. Mewborne, and B. L. Carleton, of Newport News; and Drs. J. E. Warinner, E. T. Trice, E. L. Flanagan, and A. Stephens Graham, of Richmond.

Christmas Seals and What They Do.

Continuing a custom that is now almost traditional in American life, Christmas Seals will appear again throughout the nation on Thanksgiving Day. From then until Christmas they will make their silent plea for aid for the tuberculous. For more than a quarter of a century the Virginia Tuberculosis Association and its 118 local organizations throughout the State have been waging war against this disease. They point out startling facts about it that deserve the attention of everyone.

Although progress has been made in the fight, tuberculosis is still the greatest cause of death in this country between the ages of 15 and 45, and in Virginia about 2,000 people die each year from this disease.

Tuberculosis is still Public Enemy No. 1 Among All Preventable Diseases in Virginia!



Virginia's Rank Among Southern States in Deaths From Tuberculosis

(Death Rates per 100,000 Population for the Year 1932)

One and one-half times as many young women as young men between the ages of 15 and 24 are its victims.

It causes an annual economic loss to Virginia of approximately $30,000,000.

The work financed by Christmas Seal funds is varied, but it is all directed toward the discovery of unknown cases of tuberculosis, securing treatment for them, and educating the public in basic facts about the disease so they will know how to protect themselves from it. Education of the public is the fundamental purpose of the organization. If modern knowledge about the disease were properly applied by the public, tuberculosis would soon be under control. Educational work is, therefore, unceasing.

Nursing service is frequently the major activity. Tuberculin testing of children, has assumed an important place in tuberculosis programs. X-rays are given when the physical examination or tuberculin tests indicate the possible presence of active disease. Rehabilitation work, assisting the tuberculous

patient to discover his most productive activity and to secure adequate training in this field, is being given greater emphasis as a result of recent studies.

The varied program of work and the number of persons assisted by the tuberculosis associations during the year are a remarkable demonstration of the power of the penny, for it is all made possible by the sale of Christmas Seals for a penny each during the few weeks between Thanksgiving Day and Christmas.

Dr. Ennion S. Williams,

Richmond, Va., who became associated with the Medical Department of the Life Insurance Company of Virginia, last November, has been named assistant medical director of that Company. Dr. Williams is a son of the late Dr. Ennion G. Williams, first State Health Commissioner of Virginia.

Graduate Course in Ophthalmology and Otolaryngology.

Announcement is made that the tenth annual Spring Graduate course in Ophthalmology and Otolaryngology will be held at Gill Memorial Hospital, Roanoke, Va., the week of April 6, 1936. A number of lecturers of international reputation will appear on the program.

Dr. W. R. Williams,

Richlands, Va., was named the first of this month by Governor Peery as a member of the State Board of Health, succeeding the late Dr. Joseph A. McGuire, of Norton, Va.

Dr. B. J. Atkinson,

Emporia, Va., was among those elected members of the Emporia Chamber of Commerce, at its meeting held early in November.

The National Formulary.

The American Pharmaceutical Association announces that its Council has officially approved December 16, 1935, as the date when the new N. F., sixth edition, will be released for sale in all parts of the country, and has also approved June 1, 1936, as the date when this edition will become official and will supersede the N. F. V. This new National Formulary represents a complete and thorough revision of N. F. V., and admissions and deletions are based on information obtained in the U. S. P.—N. F. Prescription Ingredient Survey.

Addition to the University Hospital Near Completion.

The new wing of the University of Virginia Hospital will be completed January 1st. The building is a PWA project and is being erected at the cost of $208,500. It will contain forty-three rooms for private out-cases. A majority of these rooms will have private baths and the entire building will be air-conditioned. It will also house private offices for the members of the hospital staff, as well as orthopedic, obstetric and delivery rooms.

Dr. John T. Hazel,

Recently located at the U. S. Marine Hospital, Boston (Chelsea), Mass., is now at 4014 13th St., Clarendon, Va.

Dr. A. C. Broders,

Professor of surgical pathology and director of cancer research of the Medical College of Virginia, Richmond, was the speaker at the meeting of the Norfolk County Medical Society on November 11th, his subject being "The Modern Conception of the Cancer Problem."

Dr. Ernest Buxton,

Class of '33, Medical College of Virginia, who interned at Grady Hospital, Atlanta, Ga., has located for general practice in Richmond, Va., and has offices at 1001 Grove Avenue.

The Association of Surgeons of the Chesapeake & Ohio Railway

Held its annual meeting at the Greenbrier Hotel, White Sulphur Springs, W. Va., on November 8th and 9th. There was an attendance of between 350 and 400 surgeons and members of their families. Dr. G. M. Todd, Toledo, Ohio, succeeded Dr. J. M. Emmett, Clifton Forge, Va., as president, and Dr. Walter E. Vest, Huntington, W. Va., was named vice-president. Mr. G. E. Meanley, Richmond, Va., continues as secretary. In addition to papers on scientific subjects, the very interesting movie, "George Washington's Railroad," was shown.

The Ladies Auxiliary of the Association took this occasion to honor Dr. William T. Oppenhimer, of Richmond, Va., who has been chief surgeon of the railway for twenty-two years, by presenting him with a silver bowl. The presentation was made by Mrs. J. M. Emmett, of Clifton Forge Va., president of the Auxilary, and Mrs. Southgate Leigh, of Norfolk, Va.

Civil Service Examinations

Are announced for Principal Medical Officer (Bacillin Calmette-Guerin) in the Indian Service at Large, and for Director, Division of Maternal and Child Health, and for Director, Crippled Children's Division, both in the Children's Bureau. Applications for these examinations must be on file with the U. S. Civil Service Commission, Washington, D. C., not later than December 9, 1935.

Dr. Woodrow W. Tyson,

Class of '35, Medical College of Virginia, received an appointment to the American Hospital, Paris, France, and entered upon his duties there several weeks ago.

Dr. Linwood Farley,

Recently connected with the Southwestern Virginia Health District at Abingdon, Va., has been made health officer of the Hanover County Health District, with headquarters at Ashland, Va.

Dr. Gladys Smithwick,

Of the class of '25, Medical College of Virginia, after a service of five and a half years with the Southern Presbyterian Mission at Suchow, Kiangsu, China, is on a furlough of a year, having returned to this country by way of Europe. Her headquarters while here will be at her home, Morven, N. C.

American College of Surgeons.

At the meeting of this Association in San Francisco, in October, Dr. Donald C. Balfour, Rochester, Minn., was installed as president, and Dr. Eugene H. Pool, New York, was named president-elect.

The Association of American Medical Colleges,

At its annual meeting in Toronto, October 28th-30th, installed Dr. John H. Wyckoff, New York, as president. Dr. Stanley Ryerson, Toronto, was chosen president-elect; and Dr. Fred C. Zapffe, Chicago, re-elected secretary. The next meeting will be held in Atlanta, Ga., October 27-29, 1936.

Educational Material on Cancer Available in Virginia.

The American Society for the Control of Cancer through its Southern Field Representative, Dr. J. W. Cox, announces that the following cancer educational material is available to professional or lay organizations, as stated:

Slides—Tumors of the Breast (Medical); and Tumors of the Uterus (Medical) from Dr. J. Shelton Horsley, 617 W. Grace Street, or Dr. F. J. Wampler, Medical College of Virginia, both of Richmond.

Film Strips—Carcinoma of the Breast (Medical); Tumors of the Uterus (Medical); Fight Cancer with Knowledge (for women's clubs, luncheon clubs and other lay audiences); Cancer: Its Life History and Practical Measures for Its Control (for university students, nurses, etc.). All of these may be obtained from Dr. Wampler.

Film Strip Projectors and *Film Without Projector* (movie) may also be secured from Dr. Wampler. An eight-minute Canti film is available for the medical profession, medical students, nurses, etc.

Dr. Beverley R. Tucker,

Richmond, Va., attended the exercises, early in November, on the occasion of the presentation of a portrait of his kinsman, John Randolph, to the Courthouse of Charlotte County, Va., his daughter unveiling the portrait.

Nurses' Institute Held in Richmond.

More than 150 nurse educators and students throughout the State attended the fourth annual Institute of Nursing at the Academy of Medicine Building, Richmond, Va., November 14th to 16th. Miss Lulu K. Wolf, Chairman of the Educational Section and Miss Frances Helen Zeigler, President, Graduate Nurses' Association of Virginia, presided at the opening sessions of the Institute which was sponsored by the Graduate Nurses' Association of Virginia.

The subjects that were discussed were especially timely for schools of nursing. The topics of last years' Institute centered around the revision of the curriculum which is under way at the present time, and the discussions this year enlightened the nurse educators as to some of the methods that may be used when the new curriculum is put into operation.

Miss Myrtle Hollo, Acting Assistant Professor, the Cabaniss Memorial School of Nursing Education, University of Virginia, addressed both the morning and afternoon opening sessions of the Institute on "The Head Nurse as a Teacher and Administrator" and the "The Head Nurse in Our Guidance Program." The characteristics of a good ward teaching program were outlined and sugges-

tions given as to the methods which could be used in putting it into operation. She stressed the fact that the curative function of the hospital is no longer its only one. She emphasized the need for students to be taught to recognize their responsibility in the community health program. The use of records in judging the personality of students was explained. An open discussion was led by Miss Clara G. Lewis, Instructor, Hampton Institute School of Nursing, Hampton, Va., and Miss Ione Smith, Instructor and Supervisor, Medical Nursing, Stuart Circle Hospital, Richmond, Va.

Miss Virginia Henderson, Instructor of Nursing Education, Teachers College, Columbia University, was the principal speaker at the second session. Her subjects were "Trends in the Teaching of the Nursing Arts" and "Methods of Teaching the Nursing Arts Program." An analysis was made of the way in which the teaching of the Nursing Arts has developed in the schools of this country, the strengths and weaknesses in each period of its development and the way in which past and present practices are being modified and adapted to more adequately meet the needs of the schools today. Considerations influencing the selection of methods of teaching were discussed. The uses and limitations of such methods of teaching as the demonstration, the clinic, the symposium, lecture, discussion, conferences and tests were dealt with briefly. Discussions were led by Miss Fern Allen, Assistant Superintendent of Nurses, St. Elizabeth's Hospital, Richmond, and Miss Verna Foster, Instructor, Virginia Baptist Hospital, Lynchburg. Miss Ethel M. Smith, Director, Virginia Schools of Nursing, and Miss Louise Oats, Professor, The Cabaniss Memorial School of Nursing, University of Virginia, presided.

At the third session, Miss Henderson discussed "Facilities for Teaching the Nursing Arts." Miss Robena Combs Anderson, Instructor and Supervisor, Pediatric Nursing, Medical College of Virginia, led the open discussion.

Each afternoon session was followed by an informal tea. All who attended the Institute felt that it had been an inspiration.

Dr. Harold B. Damron,

Class of '32, Medical College of Virginia, recently connected with the CCC Camp at Beltsville, Md., has located for practice at Elizabethton, Tenn.

Scientific Exhibit—Kansas City.

The Scientific Exhibit at the Kansas City meeting of the American Medical Association will be held in the Municipal Auditorium in conjunction with the other activities of the Association, May 11-15, 1936. The exhibit will cover a wide variety of subjects and will be an interesting feature of the meeting.

Applications for space in the Scientific Exhibit close on January 27, 1936, and assignments will be made shortly thereafter. Those desiring space should communicate promptly with Dr. Thomas G. Hull, Director of Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago, Ill.

Inter-State Postgraduate Medical Association.

At the annual meeting of this Association in Detroit, the middle of October, Dr. David Riesman, Philadelphia, was installed as president for the coming year, and Dr. John F. Erdmann, New York, was chosen as president-elect.

Dr. Gilbert O. Crank,

Formerly located at Maurertown, Va., and more recently at Charleston, W. Va., is now at Lawton, W. Va.

Dr. J. Dean Creger,

Class of '34, Medical College of Virginia, who interned at Sheltering Arms Hospital, Richmond, has located for general practice at St. Paul, Va.

Dr. J. C. Sutherland,

Who had practiced at Clintwood, Va., since 1908, moved to Sparata, Ill., early this fall, where he has bought a hospital and residence and expects to practice.

Radio Health Broadcasts.

The American Medical Association broadcasts for December are as follows:

3rd—Tuberculosis, Dr. Morris Fishbein.
10th—Hunting Accidents, Dr. Morris Fishbein.
17th—Animal Diseases in Man, Dr. W. W. Bauer.
24th—Eat, Drink and Be Merry, Dr. W. W. Bauer.
31st—Pneumonia, Dr. W. W. Bauer.

These programs are given over the NBC Blue Network and begin at 5:00 P. M., Eastern Stand-

and the title of the program is "Your Health." Tell your patients to listen in!

Annual Report of the Rockefeller Foundation.

According to the recently published report of this Foundation, they expended $12,679,775 during the year 1934, $2,200,00 of which was for public health activities. This was used in field research, surveys and control campaigns, gave aid to national and state services, and continuance of its contribution for the training of public health personnel through aids to schools, etc. The total amount appropriated for work in the medical sciences was $1,026,200. In the field of the natural sciences, $1,051,210 was granted. The social science appropriation for 1934 amounted to $1,164,690. Among the grants made in this field was one to the Institute for Research in the Social Sciences at the University of Virginia. In addition to this amount allowed for social sciences, appropriations amounting to $525,500 were made in connection with emergency grants. The field of humanities was allowed an appropriation of $749,500. This program confined itself to two fields of operation: the improvement of international understanding through cultural interchange, and the preservation and interpretation of American cultural traditions.

The book containing this report contains 408 pages and may be obtained from the Rockefeller Foundation at 49 West 49th St., New York.

Infirmary for Masonic Home of Virginia.

Dr. R. D. Garcin, for a number of years physician to the Masonic Home of Virginia, Richmond, announces that after thirty years of hoping and dreaming, his plan for an infirmary at the Home has been realized. Dr. and Mrs. Robert S. Barrett, Alexandria, have most generously given the money as a memorial to their son, and work has already started on the building.

For Sale—

Surgical instruments, cabinet, and office equipment of general practitioner. Articles in splendid condition at less than half price. For information, write Mrs. C. G. Dold, Buena Vista, Va. (*Adv.*)

Doctor Wanted—

At Crockett, Va., eight miles from the county seat of Wythe and four miles from the Lee Highway, with a hard surface road leading south to this point. Can collect between five and six thousand yearly, and the right man can exceed these figures. Fine roads, fine water, and a fine country in which to practice. For further information, write Mr. G. M. Fisher or Mr. A. B. Hounshell, both of Crockett, Va. (*Adv.*)

Position Wanted.

Excellently qualified OALR man available; 31; married; class A Southern University graduate, with twenty months otolaryngology in a New York teaching hospital. Can also do rhinoplastics. Licensed in Virginia. Answer "OALR," care this JOURNAL. (*Adv.*)

For Sale.

Residence (A. M. I.) of the late Dr. W. D. Sydnor, Hamilton, Va., and 5 acres, $6,000; terms. Wonderful opportunity for a physician. Owing to death of Dr. Clagett recently leaves town and community without a physician where there has always been two or more. C. C. Elsea, Realtor, Bluemont, Va. (*Adv.*)

Obituary Record

Dr. Joseph Albert McGuire,

Well-known physician of Southwestern Virginia, died at his home in Norton, Va., October 25th, following a stroke. He was 59 years of age and a graduate in medicine from the University of Virginia in 1900. Dr. McGuire had been a member of the State Board of Health since 1925, and had been a member of the Medical Society of Virginia for thirty-seven years. His wife and a daughter survive him.

Dr. Joseph Edward Clagett,

Prominent physician of Hamilton, Va., died October 27th, following a heart attack. He was 56 years of age and a native of West Virginia. Dr. Clagett graduated from the former Maryland Medical School, Baltimore, in 1910, and had practiced in Hamilton since his graduation. He had been a member of the Medical Society of Virginia for the last ten years. His wife and two sons survive him. ard Time. They are given in dramatized form

Resolutions on Death of Dr. Floyd.

The Northampton County Medical Society, at its meeting on October 2nd, adopted the following resolutions on the death of Dr. G. Fred Floyd:

WHEREAS: The Northampton County Medical Society has learned with profound regret of the death of their beloved and esteemed past-president, Dr. G. Fred Floyd, therefore,

RESOLVED: FIRST: That in the passing of Dr. Floyd, Northampton County has lost one of her landmarks, a typical family physician of the old school. He was idealized by his patients, and admired by his colleagues. He was strictly ethical in all his dealings and was ever ready to lend a helping hand to the younger members of the profession.

A kindhearted and unselfish man as well as a skilled physician, he gave his time and his skill liberally to the poor, the unfortunate, and ill ones of our community.

RESOLVED: SECOND: That a page in the minute book of this Society be set aside and dedicated to his memory.

RESOLVED: THIRD: That a copy of these resolutions with the expression of our sincerest sympathy be sent to the family, and a copy to the local newspaper, and to the VIRGINIA MEDICAL MONTHLY.

Signed: J. WALKER JACKSON,
E. W. P. DOWNING,
W. J. STURGIS,
Committee.

Resolutions on Death of Dr. Hume.

The following resolutions adopted by the Norfolk County Medical Society were drawn up just after Dr. Hume's death, but the Committee did not make its report until resumption of the Society's activities in the Fall:

The Norfolk County Medical Society in extraordinary session on July 30th, records with sorrow and deep regret the death of one of its valued members, Dr. Joseph S. Hume, on July 29, 1935. Possessed of qualities of high professional excellence he brought to the practice of his chosen specialty a sympathetic understanding and gentleness of execution that endeared him to his numerous clientele and won the admiration of his fellow practitioners. His untimely demise in the early years of his fruitful activity leaves a void in the ranks of the profession and in the lives of his many appreciative patients. Born in Portsmouth, Va., on November 1, 1888, his preliminary and professional education amply fitted him for the adoption of the specialty he continued to advance and improve.

At the call of his country he abandoned his rapidly growing practice, joined the University of Virginia Base Hospital Unit No. 41, and went with that organization to France. While stationed at St. Denis, the large amount of special work of the Unit devolved almost wholly on his shoulders and he bore the burden with the uncomplaining efficiency and fortitude that earned the admiration of his fellow officers.

Returning to Norfolk he took up successfully the practice of his specialty and carried on in the face of what he knew was a fatal sickness long before he was finally incapacitated.

He died as he lived—courageously.

It is moved that this resolution be recorded in the minutes of the Norfolk County Medical Society, that a copy be forwarded to the members of his family, and the VIRGINIA MEDICAL MONTHLY.

HARVIE S. BAKER, *Chairman.*
LOMAX GWATHMEY,
B. R. KENNON,
H. R. ETHERIDGE,

Dr. Charles Marion Rains,

Bohannon, Va., died October 27th, at the age of 77. He graduated from the College of Physicians and Surgeons, Baltimore, in 1877. Dr. Rains had practiced medicine for more than half a century in Mathews County and had been county coroner for twenty-five years. He was formerly a member of the Medical Society of Virginia. His wife and two daughters survive him.

Dr. Vance A. Vermillion,

For a number of years a practicing physician at White Gate, Va., died on August 31st. He was 57 years of age and graduated in medicine from the Maryland Medical College, Baltimore, in 1900.

Dr. Daniel Kerfoot Shute,

Washington, D. C., died October 21st. He was a native of Alexandria, Va., and 77 years of age. Dr. Shute graduated from the George Washington University School of Medicine in 1884, and at the time of his death was professor emeritus and lecturer in anatomy and clinical ophthalmology in this school. Dr. Shute was a former president of the Medical Society of District of Columbia and had been a member of the Medical Society of Virginia for twenty-nine years. His wife survives him.

Dr. Joseph Edward Taylor,

Danville, Va., died October 24th, following an illness of several weeks. He was 63 years of age and received his medical degree from the Medical College of Virginia in 1893. He was for many years Danville city coroner and jail physician. Dr. Taylor was well-known in connection with baseball, being president of the Bi-State (Virginia and North Carolina) Baseball League. A daughter survives him.

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WHOLE No. 1003.

RICHMOND, VA., JANUARY, 1936

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THE M.[illegible] OF MEDICINE

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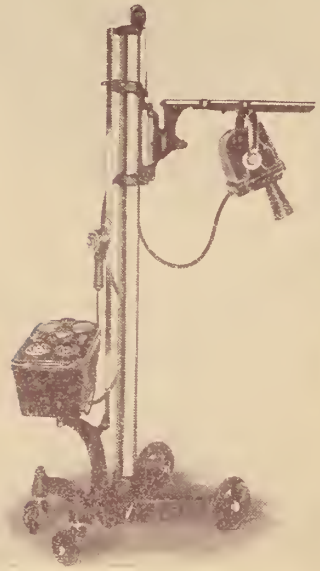

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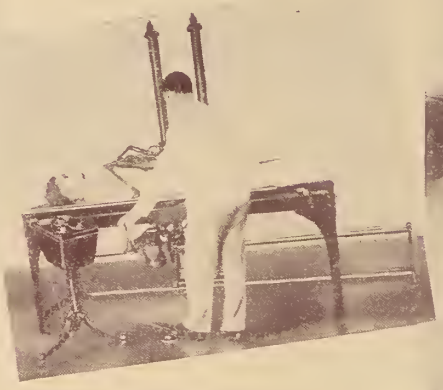

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THE DOCTOR AND HIS BILL—IS THE MEDICAL PROFESSION REACTIONARY?

Arthur C. Christie, M. D.,
Washington, D. C.

People have suddenly become interested in the doctor's bill. They write about it in magazines and newspapers and talk about it in forums and over the radio. Until recently the doctor was silently taken for granted, sometimes being paid for his services and sometimes not, but no one seemed to worry much about it either way. The doctor himself, since the advent of modern science, has been engrossed in the study of means to prevent and cure disease, and it seemed until lately that he was justified in taking a quiet satisfaction in the gradual but steady progress apparent in the battle against many of the worst enemies of the human race. It is somewhat to his astonishment that he finds himself and his profession the center of an attack which questions both his motives and his methods. It is generally admitted, although in a rather casual way, that the doctor has played a beneficent role in the fight against disease, but it is charged that he has taken little interest in the social and economic aspects of the care of the people's health and that he maintains a reactionary and even obstructionist attitude toward needed reforms.

The controversy has centered for the most part about the inability of people with moderate or low incomes to pay for medical care. It is a problem that has developed and enlarged as the world has become industrialized Primarily it is a problem which will be adequately and permanently solved only when industry is able and willing to pay a wage sufficiently above a subsistence level to enable all the people dependent upon it to purchase for themselves the necessities of life, one of which is medical care.

That it is a real problem no one will deny but there is disagreement over the proper means for its solution. On the one hand are those who advocate health insurance, either voluntary or compulsory. The majority report of the Committee on the Costs of Medical Care recommended voluntary health insurance while the American Association for Social Security has sponsored a bill before legislative bodies throughout the nation providing for a system of compulsory insurance. On the other hand are those who contend that health insurance, both voluntary and compulsory, has set up many new evils wherever it has been established which are worse than those it is designed to cure. They contend not only that its net effect in operation is harmful but that it is a temporary expedient aimed at one small aspect of the total problem which will serve merely to delay the day when industry will provide a wage far enough above the subsistence level to enable those dependent upon it to furnish for themselves, in independence and self-respect, the necessities of modern civilized life.

Among those who have taken the latter position are the majority of the medical profession throughout the United States and it is for this that they have been dubbed "reactionary" and "obstructionist."

Here is an important problem vital to the public welfare,—"how shall we provide medical care for people of moderate incomes at prices that they can afford?" There are two opposing views held in honesty and sincerity which cannot be reconciled by calling names. Mutual recriminations and the citing of special instances of inequity or abuse serve

only to becloud the issue, which should be debated on its merits.

The case for health insurance has been presented through press and radio until the arguments in favor of its adoption must be well known to all thoughtful people. It is important that the reasons for opposition to health insurance by the medical profession should be equally well known before action is taken. Fundamentally, the opposition is based upon a sincere conviction that health insurance will inevitably bring about deterioration in the quality of medical service available to the American people, and upon an honest desire to save the public from trial of methods which, in the opinion of physicians, have proven inadequate and harmful.

The arguments for health insurance upon their face seem sound. Sickness hazards are unpredictable and therefore cannot be budgeted, and a certain percentage of people have medical bills beyond their ability to pay. It therefore seems utterly logical to spread the costs of medical care over a group or the entire populace by means of some type of insurance. Thus stated the problem seems simple, but when analyzed it is complex and difficult.

The proponents of insurance like to cite the public school system as an example of what can be accomplished by joint community action and hold it up as an example of the manner in which medical care could be assured to everyone by the community at large. Such an analogy breaks down at many points. On the one hand is an educational system for a certain age group which requires attendance at a designated place within designated hours on designated days of the week for a portion of each year, the purpose being to give instruction to groups, with a minimum of individual attention. On the other hand is a system of medical care from birth to death, in homes, hospitals or clinics, at any hour of the day or night for every day in the year, such care being given to each individual with little possibility of dealing with groups. Most important of all is the fact that medical care at its best must insure the personal attention of a particular physician freely chosen by the patient.

Another so-called analogy is one used by Evans Clark in "How to Budget Health." He states that he is indebted to Mr. Edward A. Filene for this suggestion. It seems ridiculous to him that medical practice is not organized on the same lines as the automobile repair industry. The incongruities in such an analogy are at once apparent to the experienced physician who must deal not simply with a broken mechanism, but with a *person* whose thoughts and emotions are intertwined with his physical derangement in such an intimate manner that they must be carefully considered in all treatment directed to alleviation of his disability. When Johnny awakes in the middle of the night with the croup, or Mary is tossing with fever it does not suffice to direct that they be brought in to some central repair shop. The doctor must attend them at once in their homes, and there he must know not only how to recognize and deal with the physical ailments which have produced the alarming symptoms but he must exercise sympathy and tact toward three different personalities—the sick child, the father and the mother and possibly the grandmother or other members of the family. In other words, his problem is one that cannot be solved by standardization and centralization. It is not a mechanical or organizational problem at all but one of personal relationships. That improvement can be made in the organization of the medical profession no one will deny, but it is vitally important that in improving the organization care be exercised to preserve the intangible, but none the less real, spiritual values which have made medicine a great humanitarian profession.

"But," argue those who favor health insurance, "all of this we recognize. We know that the personal relationship between patient and physician is important and that confidence and faith in the individual physician are essential in the treatment of the sick, but we cannot understand how this has anything to do with the method of paying the physician for his services."

This, in the opinion of the majority of physicians, is the exact point at issue. It is their conviction that experience offers ample proof that health insurance always interferes with or makes impossible the maintenance of the personal relationship; that it precludes free choice of physician; that it substitutes a standardized, regimented type of contract practice for the individual attention possible under the present system; that it subjects the medical profession and the sick to the domination of industrial groups, insurance companies or government bureaus which interferes with the orderly progress of medical science

and results in inferior medical service to the people.

Voluntary insurance systems have existed in Europe and the United States for many years. In Europe they have universally failed and have been superseded by compulsory systems. They are in operation in many places in the United States and wherever they are established they are accompanied by solicitation of patients, destructive and demoralizing competition among professional groups and lowering of standards of medical practice.

Compulsory health insurance alleviates some of the evils consequent upon the voluntary form but adds some that are peculiar to itself. When the state passes a law compelling certain groups of the population to take out health insurance there develops a bureaucracy to administer the insurance system which results in a high degree of political control. This has followed so regularly upon adoption of compulsory insurance that it seems an inevitable result.

If health insurance had great benefits to confer in compensation for the evils which invariably accompany it there would be less reason for opposition to it. It is admitted even by its proponents that health insurance at its best is not a panacea; that it is in fact directed at only one limited aspect of the total problem.

A comprehensive plan for medical care in any community must include systematic measures for prevention as well as cure of disease and also adequate provision for care of the indigent sick. In neither of these respects has health insurance proven itself of any value. In those countries where nation-wide compulsory health insurance has been established for many years, notably Germany and England, it has not been effective as a public health measure, as proven by the fact that it has neither reduced the death rate nor lowered the sickness rate.

The care of the indigent sick is a burden borne almost entirely by the medical profession alone. It is a problem that has never been attacked in an adequate manner. Health insurance is directed to spreading the costs of medical care over groups of employed people in the lower income brackets and offers no solution to the problem of medical care for the indigent.

The medical profession indicts health insurance on the following counts: 1.—It is too narrow in its application, being suitable only for industrial groups in cities to the exclusion of the rural population. 2.—It offers little or no assistance in the prevention of disease; it neither lowers the death rate nor reduces sickness. 3.—It does not reduce but actually increases the total costs of medical care by adding to the present cost the expenses of administration of the insurance system. 4.—It sets up a burdensome system of taxation represented by a wage-tax, a payroll tax and a general tax upon the entire tax-paying community, to be paid by many people who neither need nor want health insurance. 5.—It results in political and bureaucratic control of the medical profession which produces an inferior quality of medical care and interference with medical progress.

If such opposition is "reactionary" or "obstructionist," the medical profession must plead guilty. It holds a strong conviction that the profession which is specially trained in the prevention and cure of disease must oppose every measure which will interfere with medical progress. Such opposition it holds to be in harmony with real progress and in line with sound public policy.

That the medical profession is not static or reactionary is amply proven by the progress maintained in the past. Not only is it true that the average standard of living of the people of the United States is well above that of the average in other countries, but it is equally true that the quality and adequacy of medical care in this country is equal or superior to that of any other country in the world. Under the system which has been subject to so much criticism of late medicine has steadily progressed. It is the belief of the majority of medical men that future progress is to be maintained by careful correction of deficiencies and evils in our established system and by adapting it to the changing social and industrial conditions of our day. In the words of Sainte-Beuve, we must be constantly on the alert to "understand how to reconcile tradition with freedom of development and independence."

That the medical profession is alive to the needs of the day is indicated by the numerous plans in various stages of perfection which are being operated in many localities throughout the United States under the direction or with the cooperation of medical societies. From Alameda County and San Diego, California, to Wayne County, Michigan, Dayton, Ohio, and Washington, D. C., plans are in operation to solve many of the difficulties in the complex problem of medical care for all of the people. For

example, in Washington, D. C., the Medical and Dental Societies, white and colored, in cooperation with the Public Health Officer, the Board of Public Welfare, the Community Chest, the Council of Social Agencies, and the hospitals has set up within the past two years the following agencies, each designed to deal with some special aspect of the problem of medical care: First, the Central Admitting Bureau for Hospitals. Through this agency every person must pass who is to receive assistance in whole or in part through public funds or funds of the Community Chest to secure hospitalization or medical care in the hospital free clinics. After careful investigation by trained social service workers, each person receives the amount of help necessary in his particular case. If he is wholly indigent the Board of Public Welfare becomes responsible for him, but if he is able to pay something the Community Chest assists to the necessary extent to secure for him his needed hospitalization in the hospital of his choice. One of the most important aspects of this agency is its complete system of records which will enable the community in a comparatively short time to define accurately its indigent sick problem. The further problem of home care for the indigent sick and the relation of the care of the indigent to the prevention of disease can then be attacked upon the basis of accurate information. Not the least value of The Central Admitting Bureau has been the fact that it has furnishsed a common meeting place and means for coordination of efforts of the medical and dental professions, the hospital managements, the public health authorities and the public spirited citizens active in the Community Chest and the Council of Social Agencies. Through it this community is well on the way to adequate solution of its problem of care of the indigent sick and those in the very low income group.

The second agency in the Washington, D. C., plan is The Medical-Dental Service Bureau which has been established by the medical and dental professions, both white and colored. It is housed in the same building as The Central Admitting Bureau, and its work is carefully coordinated with that of the latter. Through it, people of moderate and low incomes can make arrangement for payment of their total medical and dental bills, at no cost for the service, through a partial payment plan adjusted to their means. The success of this bureau seems already assured and it has important developments under way to further assist people of moderate means to maintain their independence and finance their own medical care without recourse to charity or any health insurance plan.

The third agency which is now successfully operating in Washington is a plan of group hospitalization. Group Hospitalization, Inc., was organized by public spirited citizens after a careful investigation by the Council of Social Agencies and with the complete cooperation of the organized medical profession and the hospitals. It has concluded its first full year of operation and with more than 10,000 employed persons using the plan its success is assured. The plan provides for twenty-one days of hospitalization in any one year by payment of nine dollars per year. By rigidly excluding every form of medical care and confining itself to hospitalization, the plan is free from the objectionable evils of health insurance and is on a financially sound foundation.

Besides these efforts in the socio-economic realm, the medical profession is alert today to necessary changes within the medical field. There are not only constant advances taking place in the field of under-graduate education but medical societies now in many localities are furnishing means for post-graduate education which will keep the general practitioner abreast of medical progress. Specialism, which has been of great value but in which abuses have developed, is being better defined and brought under control by special boards and by an Advisory Board for the Medical Specialties.

Here, then, is a systematic effort to solve the problems of medical care by utilization of the facilities at hand and by carefully correcting and adding to the present system. Each community has its own special conditions and its own peculiar problems so that no one plan is applicable to all. It should be remembered that experiments launched in society have an important difference from those undertaken in the physical realm. Once put into effect they cannot be readily recalled, the materials discarded, and a new start made. Social experiments have a way of fastening themselves upon the social body and making themselves a part of it. In general it is true that social problems are best attacked by the empiric method and a step at a time. This is the best type of "social planning" since it reveals the

changes produced in the total problem as each successive step is taken. It is the method by which medicine has made progress in the past and the medical profession in the United States hopes to be permitted to continue this method through the unsettled days of the present. Health insurance is not a step in such a program but a complete and almost revolutionary change from the present system. When once adopted there is no longer the possibility of gradually changing and improving the old order, for the old order will have passed away.

1835 Eye Street, Northwest.

POLIOMYELITIS IN CHARLOTTESVILLE, VIRGINIA, AND THE ADJACENT COUNTY OF ALBEMARLE.*

W. W. WADDELL, JR., M. D.,
and
C. W. PURCELL, M. D.,
University, Va.

Within the past few months poliomyelitis has been reported throughout the State of Virginia to an extent never before recorded. Not since the influenza epidemic of 1918 and 1919 has the populace of this State been so acutely concerned with its state of health, and undoubtedly there has been sufficient cause for this very manifest anxiety. It must be admitted that in certain sections of Virginia poliomyelitis has occurred in serious epidemic proportions. Charlottesville and Albemarle County have been publicly referred to as a "hot bed" of poliomyelitis; and if one cares to base an opinion on figures made public this would certainly seem to be a proper characterization.

In the clinics at the University of Virginia Hospital we have observed 111 patients who, in our opinion, were suffering from poliomyelitis and were so certified to the proper authorities. In every case the diagnosis was confirmed or strongly suggested by examination of the cerebrospinal fluid. The purpose of this paper is to describe clinically these cases as we have observed them and to discuss briefly certain very pertinent facts of medical interest and importance. In view of the difference of opinion and conflict of emotions resulting from our recent experience a discussion of this subject would seem particularly desirable at this time.

When poliomyelitis first appeared in Charlottesville and surrounding sections it became necessary for the University Hospital to adopt a policy concerning the admission of cases of this disease. Due to physical conditions which made impossible adequate isolation of patients, hospital authorities made it a rule to accept no patient who could be adequately cared for in the home. The majority of the patients described in this report were, therefore, seen in the out-patient clinics. Thirty-eight of the cases were observed by those in charge of the adult service and seventy-three by those in charge of the pediatric service. Since it was necessary to return these patients to their homes, in many instances only one examination was afforded during the acute stage of the disease. In evaluating this series of cases, particularly as regards the frequency of any one sign or symptom, it must be remembered that the majority of cases reported here represent out-patient cases, most of them seen only once. Nineteen patients were treated in the hospital, and for this reason afforded a better opportunity for study. Forty-seven of the patients from the department of pediatrics were subsequently brought back for a follow-up examination after the period of quarantine had expired.

As with previously reported epidemics the disease has been observed chiefly in children and young adults. The youngest case reported here was eight weeks of age and the oldest was thirty-five years. The following table shows the incidence in the various age groups.

The onset has been sudden and characterized in most instances by fever, headache, vomiting and stiffness of the neck and back, this stiffness being associated with pain in many instances. This group

*From the Department of Pediatrics, University of Virginia.

Read at the sixty-sixth annual meeting of the Medical Society of Virginia in Norfolk, October 15-17, 1935.

of symptoms has been so constantly present that the history of one might well serve as the history of the majority. This has been especially true as regards the older children and adults.

Table 1.

AGE GROUPS

Youngest 8 weeks		7 to 8 years	6
Under 6 mos.	5	8 to 9 years	7
6 mos. to 1 yr.	3	9 to 10 years	3
1 to 2 years	6	10 to 11 years	5
2 to 3 years	13	11 to 12 years	3
3 to 4 years	3	12 to 15 years	12
4 to 5 years	6	16 to 20 years	9
5 to 6 years	8	21 to 25 years	12
6 to 7 years	5	26 to 30 years	4

31 to 35 years 1

Under 12 years 73 Cases

Over 12 years 38 Cases

Fever was present at the time of examination in sixty of the reported cases. While the recorded temperature of our patients varied from normal to 105° F., it must be remembered that the degree of temperature naturally varied in relation to the time of onset. The average temperature reported at the time of examination ranged from 101° F. to 102° F.

Headache was the most common finding, occurring in eighty-three of the 111 reported cases. The headache was usually frontal in character and was made worse when the patient attempted to sit up. The incidence of headache was very striking, even in the younger children, and it must be admitted that headache is not a common childhood complaint.

As in previously reported epidemics the most pathognomonic of all signs was stiffness of the neck and spine. Efforts to induce flexion of the spine caused marked "splinting" in a fair proportion of our cases. Evidence of stiffness of the neck and back was noted in 37.9 per cent of the cases. As would be expected, a typical "poker spine" was observed more frequently in older children and adult patients.

Nausea or vomiting occurred sixty-nine times as an early sign of illness, and diarrhea occurred ten times. In some instances vomiting was a very troublesome feature, and interfered with symptomatic treatment.

Sore throat was a complaint in five instances, and many patients not complaining of soreness showed on inspection of the throat marked injection of the tonsils and posterior pharyngeal wall. Coryza was noted in only two instances.

Hyperesthesia was noted less frequently perhaps than in previously reported epidemics. Pain in the extremities was present in ten patients. Twenty complained of abdominal pain; one patient was sent to the hospital by the attending physician with a diagnosis of acute appendicitis. A not infrequent sign was pain and soreness when the eyes were rotated, and occasionally these patients objected to bright light.

Listlessness or actual drowsiness was observed seventeen times. Convulsions were noted in two patients, the older being five years of age and the younger two years.

Change in the reflexes was a common observation. Exaggerated reflexes early in the disease was the rule; a second examination at a later date often showing marked diminution or actual loss of deep reflexes previously hyperactive. We agree with other observers that reflexes in infants and very young children are apt to be uncertain and unreliable. It may be stated with a reasonable degree of accuracy that reflex changes were present in 47.8 per cent of our cases.

Respiratory difficulty was observed in three patients. In one instance this made necessary the use of the respirator over a long period of time.

Retention of urine was noted in two instances, being sufficiently obstinate to require the use of a catheter. In both patients, however, this condition was completely relieved in a few days time.

Enlargement of the spleen was a confusing finding in two patients and typhoid fever with meningismus had to be ruled out as a probable diagnosis. The usual laboratory procedures diagnostic of this disease were negative. The subsequent course of the disease substantiated the diagnosis of poliomyelitis.

The following table shows the frequency of the various symptoms and signs observed.

SYMPTOMS AND SIGNS

	Cases	*Per Cent*
Headache	83	74.7
Vomiting	62	55.9
Temperature on examination	60	54.0
Change in reflexes	53	47.8
Pain and stiffness in neck or back	42	37.9
Evidence of muscle weakness	24	21.6
Pain in abdomen	20	18.0
Listlessness or drowsiness	17	15.3
Diarrhea	10	9.0
Pain in extremities	10	9.0
Nausea	7	6.3
Sore throat	5	4.5
Difficulty in breathing	3	2.7

	Cases	*Per Cent*
Dizziness	2	1.8
Coryza	2	1.8
Convulsions	2	1.8
Unable to void	2	1.8
Enlargement of spleen	2	1.8
Unable to swallow	1	0.9

A most interesting feature has been the infrequency of paralysis compared with the number of individuals affected. Twenty-four of our 111 cases showed definite muscle weakness or actual paralysis. It must be remembered that the majority of the patients were seen only the one time and that transient muscle weakness may have occurred and probably did occur subsequent to our examinations. It is by no means easy to measure muscle weakness in certain groups of muscles and we admit that our ability to detect this sign improved very noticeably with further acquaintance with the disease in question. This was particularly true with infants and young children. It seems likely that physicians for many months to come will see patients with weakness in certain muscle groups as well as changes in posture and other evidence of diagnosed and undiagnosed poliomyelitis. We were able to detect muscle weakness in 21.6 per cent of the cases and a considerable number showed weakness or actual paralysis after being discharged from quarantine.

The various regions of the body showing muscle weakness or actual paralysis are indicated in the following table:

Table 3.
TYPES OF PARALYSIS

Paralysis of one or both legs	10
Paralysis of one or both arms	5
Combined paralysis of legs and arms	5
Isolated paralysis of cranial nerve	2
Combined paralysis of spinal and cranial nerves	3

Total—24 patients or 21.6%

The average duration of acute symptoms was three to five days. In twenty-five cases in which this fact could be accurately determined the average was 4.4 days. An illness of thirty-six to forty-eight hours was a frequent occurrence.

SPINAL FLUID

One or more spinal fluid examinations were made in each case included in this report. All laboratory tests were done under the direction of Dr. William E. Bray, Professor of Clinical Diagnosis, at the University of Virginia, and we acknowledge our grateful appreciation of his helpful advice and cooperation.

In every instance the spinal fluid was noted as clear or at most slightly opalescent in character. The pressure appeared normal or perhaps slightly increased in a few instances.

Increase in cells, while present in most cases, has been a variable factor. It is generally accepted that the earliest pathological change in the nervous system is that of hyperemia. It is not surprising that marked differences in the cell count have been observed in this series of cases as in all other previous reports. The degree of cell increase was in no way proportionate to the severity of symptoms or the occurrence of paralysis. A cell count above 12 has in the past been considered as an abnormal finding. In this series we have reported thirty-nine cases with a cell count less than 12 but in every instance there was present a noticeable increase in spinal fluid protein. What one finds in the way of cell increase may vary with the time when lumbar puncture is performed. We have reported thirty-nine cases in which lumbar puncture performed within twenty-four to thirty-six hours of the acute illness showed only increase in the protein content of the spinal fluid. A subsequent puncture performed several days later on eight of these patients showed the characteristic cell increase in three instances. Our observation of the cell count has ranged as follows: Thirty-nine cases with a count below 12; twenty-six cases with a count between 20 and 60; thirteen cases with a cell count between 60 and 100; twelve cases with a cell count between 100 and 200; fifteen cases with a cell count above 200. The lowest count reported was no cells and the highest 1,480 cells. The average for all cases showing definite cell increase was 155.4 cells. In forty-one of our cases the type of cell noted was of the lymphocyte variety while in forty-seven instances polymorphonuclear cells predominated. In three instances the cell types were equally divided. Polymorphonuclear increase was frequent in those cases showing marked cell increase.

We have been interested in protein increase as a sign of central nervous system involvement, and have reported as poliomyelitis thirty-nine cases in which protein increase was the only spinal fluid finding indicative of the disease. Six of these showed typical cell increase at a later date. Our reasons for reporting such cases seems to us sufficient. Very early in our experience we observed a case with marked paralysis of the face and arm in which protein increase was noted without increase

TABLE 4

SPINAL FLUID ANALYSIS

Number of Cells	Number of Cases	Cell Type			Globulin				
		Pmn	Lymph	Equal	Normal	1+	2+	3+	4+
None	20	0	0	0		8	8	3	1
Below 12	19	4	14	1	1	8	8	2	0
12-20	6	3	3	0		3	2	1	0
20-60	26	12	13	1	1	14	11	0	0
60-100	13	7	6		2	3	6	1	1
100-200	12	9	3			4	2	3	3
200-400	7	4	2	1		2	1	2	2
400-600	6	6	0			2	1	2	1
Over 600	2	2	0			0	1	1	0

in cell count. We note that Levinson[2] has recently reported five cases with muscle weakness in which there was no increase in cells. To those five cases we are glad to add eleven more. It is, of course, to be supposed that we have certified no case as poliomyelitis, with protein increase as the only spinal fluid finding, that was not supported by adequate symptoms and signs of the disease. It is felt that too little emphasis has been placed on the possible absence of cell increase in poliomyelitis. This feeling has been voiced by other writers[3,4,5,6] on this subject. Meals and Bowers[5] have pointed out the error of current medical opinion as regards this point and have reported a series of cases in which 12.8 per cent had a normal cytology in the spinal fluid, yet showed characteristic neurological findings.

It is realized that protein increase and abnormal cytology have been observed in numerous types of illness. When poliomyelitis is occurring in epidemic proportions these same conditions are not infrequently erroneously classed as examples of this disease.

As a further check in the finding of increased protein in the spinal fluid we have to date studied twenty-five patients not suspected of having poliomyelitis. On account of the ease of securing specimens we selected for this group surgical patients receiving spinal anesthesia. Sixteen showed negative spinal fluid findings. Of the eight showing positive globulin one was found to have a cord tumor, another had previously been diagnosed syphilis of the central nervous system, and showed cell increase as well as protein increase; a third gave a definite history of poliomyelitis within the week preceding the onset of appendicitis; one other case had positive serology of syphilis. In four instances we were unable to account for increased protein unless the following surgical conditions can be held accountable: acute appendicitis with migraine, carcinoma of the cecum, ruptured appendicitis, and inguinal hernia.

Spinal fluid sugar determinations were made in sixty-nine instances and chloride determinations in fifty instances. In no case did these findings suggest some other disease. The average sugar content was 59 mg. per 100 c.c., and the average chloride content was 584 mg. per 100 c.c. of spinal fluid.

In the following table are listed a group of cases all of which had normal cytology in the spinal fluid at the time of the first puncture. It will be noted that in fifteen instances lumbar puncture was done within twenty-four hours of the onset, and in eleven instances within forty-eight hours. The symptomatology differed in no way from other cases which we have observed. Protein increase was present in all but three cases at the time of first puncture.

MORTALITY

Death occurred in three patients. Two died as the result of a bulbar paralysis, and a third from pneumonia following a prolonged stay in a respirator. A complete necropsy was obtained in the case reported below.

Hospital No. 118764. H. K., a negro male child, two years of age, was admitted to the University of Virginia Hospital because of nausea and restlessness of three days duration. Twelve hours before admission it was noted that the child seemed weak and unable to stand.

Physical examination showed an acutely ill colored child. Respiration was labored and breathing abdominal in character. Drowsiness almost to the point of stupor was noted. Examination of the eyes showed nystagmus of both eyes in the horizontal direction. The throat was injected and a generalized lymphadenopathy was present. There was marked weakness of both legs and arms, more notice-

CASES SHOWING INCREASED PROTEIN AND CELL COUNT UNDER 12 CELLS

Days from onset 1st Puncture	Cells	Glob.	Stage of Illness	Weakness	Days from onset 2nd Puncture	Cells	Glob.	Stage of Illness	Weakness
4	0	1+	Acute	No	6	143	2+	Convalescing	No
1	0	1+	Acute	No	5	6	2+	Acute	No
1	0	1+	Acute	No	3	0	2+	Convalescing	No
2	12	1+	Acute	Left leg					
2	2	2+	Subacute	Both legs and arms					
1	6	2+	Acute	No					
3	0	2+	Acute	No					
4	0	2+	Acute	No					
7	0	3+	Acute	Right leg					
7 hours	0	2+	Acute	No					
3	0	2+	Subacute						
3	0	3+	Subacute	No					
2	0	0	Acute	No	8	42	1+	Subacute	Right leg
2	0	2+	Acute	No					
12 hours	0	1+	Subacute	No					
1	0	1+	Acute	No	3	0	2+	Convalescing	No
2	0	3+	Acute	Left leg					
7	0	2+	Acute	Right leg					
2	0	2+	Acute	No					
2	0	0	Acute	No	5	14	3+	Acute	No
1	0	1+	Acute	No					
3	0	1+	Acute	No					
7	0	4+	Acute	Right leg	15	0	3+	Subacute	Right leg
2	0	1+	Acute	No					
4	0	1+	Acute	Right leg					
2	12	0	Acute	No					
3	5	1+	Subacute	No					
1	11	2+	Acute	No					
7	3	1+	Subacute	Right facial and arm					
1	11	1+	Acute	No					
5	1	3+	Acute	No					
18 hours	10	1+	Acute	Both hands					
7	1	2+	Acute	No					

CASES SHOWING INCREASED PROTEIN AND CELL COUNT UNDER 12 CELLS—CONTINUED

Days from onset 1st Puncture	Cells	Glob.	Stage of Illness	Weakness	Days from onset 2nd Puncture	Cells	Glob.	Stage of Illness	Weakness
12 hours	10	1+	Acute	Both hands					
8	1	2+	Convalescing	No					
12 hours	7	3+	Acute	No					
1	5	1+	Acute	No					
2	1	2+	Acute	No					
12 hours	1	1+	Acute	Right leg					
12 hours	1	1+	Acute	No	3	10	2+	Subacute	Unable to void
2	10	2+	Acute	No					

CASES WITH TWO OR MORE LUMBAR PUNCTURES

Days from onset 1st Puncture	Cells	Glob.	Stage of Illness	Weakness	Days from onset 2nd Puncture	Cells	Glob.	Stage of Illness	Weakness
1	0	.....	Acute	No	5	85	0	Acute	No
1	0	0	Acute	No	4	96	2+	Subacute	No
4	0	1+	Subacute	No	7	143	2+	Convalescing	No
1	0	1+	Acute	No	5	6	2+	Subacute	No
1	0	1+	Acute	No	3	0	2+	Acute	No
2	510	1+	Acte	No	4	115	1+	Subacute	No
12 hours	14	2+	Acute	No	5	360	4+	Convalescing	No
2	0	0	Acute	No	8	42	1+	Subacute	Right leg
1	0	1+	Acute	No	4	0	2+	Convalescing	No
3	24	2+	Acute	Bulbar throat	13	3	4+	Subacute	Bulbar
2	0	0	Acute	No	5	14	3+	Acute	No
12 hours	1	1+	Acute	No	2	10	2+	Acute	Unable to void
Several hours?	280	2+	Acute	No	6	3	2+	Convalescing	No
7	0	4+	Acute	Right leg	15	0	3+	Convalescing	Less extensive
1	1480	3+	Acute	No	2	347	4+	Acute	No

able on the left side. Rigidity of the neck was not present. Knee jerks and ankle jerks were absent and abdominal reflexes could not be elicited. Other reflexes appeared normal.

Temperature on admission was 104° F. and the respiratory rate was 84 per minute, pulse rate 198. Examination of the blood showed 100 per cent hemoglobin, 4,400,000 red and 21,400 white cells. Differential showed 69 per cent polymorphonuclears and 25 per cent lymphocytes, and one eosinophil.

Lumbar puncture on admission showed 372 cells with polymorphonuclears predominating. Pandy's was negative and Ross Jones' 1+.

Death occurred four hours after admission, apparently as a result of bulbar paralysis.

We are indebted to Dr. Albert E. Casey, Associate Professor of Pathology at the University of Virginia, for the following necropsy and pathological report.

"Cultures of tissues from the spinal cord and from the heart were made in bile and broth. These were found to be sterile.

"The gross anatomical findings in this case represent first an enormous enlargement of all lymphoid tissues in the body, particularly noticeable in the Peyer's patches and solitary follicles of the intestines, mesenteric, mesocolic and retroperitoneal lymph glands. The spleen was enlarged, friable, and the splenic corpuscles unusually prominent. A small reddish nodule was seen on the tunic of one testicle. Small bright red, circular areas, several mm. in diameter, were scattered over the lungs and there was congestion of the lungs on section. The vessels of the meninges were markedly injected; no discoloration of the cerebrospinal fluid was noted. On cut section there was marked injection of the gray matter, particularly in the cervical spinal cord, in the medulla, areas of the pons, thalamus, lenticular caudate nuclei, but not prominent elsewhere.

"The microscopic findings show an enormous enlargement of the germinal centers of lymph follicles throughout the body with diminished mitoses, increased masses of monocytes and endothelial cells and clasmatocytes, with occasional areas of focal necrosis. The peripheral mantle of small lymphocytes was much diminished and in many instances could with difficulty be found. This change involved the lymph follicles of the spleen (splenic corpuscles), of all lymph nodes, solitary follicles and Peyer's patches. The reticulo-endothelial cells in the lymph sinuses were markedly increased in numbers and occasional neutrophils and eosinophils were seen. The interstices of the lungs were thickened with edema and considerable exudates of monocytes and neutrophils. The pulmonary alveoli were very little affected. The perivascular and lymphatic spaces throughout the body in all tissues showed scattered neutrophils, monocytes and eosinophils. In the meninges, particularly in the thoracic, cervical and medullary areas, there were moderate numbers of monocytes and neutrophils, the former predominating. The perivascular spaces of the cord, medulla, thalamus, cerebellar nuclei, lenticular and caudate nuclei showed masses of neutrophils and monocytes, the change being possibly most marked in the pons and medulla, and diminishing distally from this area. There were a few small foci of monocytes and neutrophils in the gray matter of the cord or nuclei, not apparently related to the blood vessels. Scattered ganglion cells showed basophilic cytoplasm and hyperchromatic nuclei. Occasional dead cells were noted. In the cord, individual fibers and bundles of fibers show considerable swelling of the myelin. Anterior and posterior portions of the cord and brain were equally affected. The lateral cerebral hemispheres, ventricles and choroid plexus were little affected. Occasional neutrophils and monocytes were present in the perineural lymph spaces of peripheral nerves. The liver showed a diffuse cystoplasmic fatty change, more prominent near the central veins. No areas of focal necrosis were observed.

"In conclusion, the change is that of a generalized infection marked by an exudate of reticulo-endothelial cells of monocytic and clasmatocytic types, of neutrophils and eosinophils. The lymphoid tissues, the interstices of the lungs, the lower cerebral and upper spinal segments being most affected."

Recovery of Virus

The spinal cord from the above case was placed in glycerin and forwarded to Dr. Charles Armstrong at the National Institute of Health. From this material he recovered a strain of virus capable of causing paralysis in monkeys. This, in so far as we are aware, represents the only instance of the recovery of a virus strain from a case of poliomyelitis in Virginia or North Carolina.

Estimated Incidence in Charlottesville and Albemarle County

Charlottesville and Albemarle County represent a population of 42,000. We estimate that 1,500 cases of poliomyelitis have occurred in the city and county. It seems hardly possible that the University Hospital clinics could have received more than one-tenth of the total number of people affected. The very mildness of the recent epidemic lends support to this assumption. Conversations with various physicians further convince us that our estimate is conservative. Numerous physicians in our community admit having seen fifty or more cases pre-

senting symptoms and signs identical with those we have described. The majority of these physicians, having profited by a first experience with poliomyelitis, as has the writer, feel that their patients represented true cases of this disease, although reports of only a few of their cases will be found in the records of our State Health Department. The reasons for failure to report these cases need not be discussed at this time. If the disease here described is poliomyelitis we must admit a morbidity out of all proportion to previous ideas as to its incidence.

A morbidity rate such as we have described is certainly not in accord with our previous conception of this disease. Figures concerning the morbidity rate of past epidemics of poliomyelitis are largely those of state and federal public health agencies. We are inclined to believe that they do not tell the whole story and that perhaps past epidemics have had associated with them a large number of non-paralytic cases which have never come to the attention of the medical profession. Due to the activities of a very energetic corps of field nurses we have had the opportunity of observing a large number of mild cases, so mild in many instances that they would ordinarily not have sought the services of a physician.

Just how misleading statistics on this subject may be is well illustrated by the following comparison: During the past spring and summer 647 cases of poliomyelitis were reported to the Virginia State Health Department, 191 of these having been reported from Charlottesville and Albemarle County. Questionnaires sent out on these 647 cases were productive of 525 answers. Of these 525 which reported 271 had suffered some degree of muscle weakness and 254 were reported as non-paralyzed, a paralysis rate of 51 per cent. Among the questionnaires received were 191 from Charlottesville and Albemarle County which reported twenty-eight paralyzed and 163 non-paralyzed cases, a paralysis rate of 14 per cent as compared to 51 per cent for the State at large. Excluding the cases from Charlotesville and Albemarle County the paralysis rate for the remainder of the State is 72 per cent. If the disease described by us is poliomyelitis it must be admitted that our State statistics can hardly be of any real value in so far as any comparative study is concerned.

The above discrepancy can in a large measure be explained by confusion in the medical ranks and the reporting of only paralyzed cases. The reporting of paralyzed cases alone gives no reliable index of the incidence of poliomyelitis in any city or state, and the quarantine of a few paralyzed individuals accomplishes little in the way of public protection. Once poliomyelitis becomes entrenched in a community it is doubtful if any system of quarantine can be effective. It would seem to us necessary that we change many of our present ideas concerning quarantine of and the reporting of cases of poliomyelitis.

The very prevalence of the disease together with the low rate of paralysis have been the two features which have led many careful physicians to refuse to admit any unusual occurrence of poliomyelitis in this State, or to advance the idea that we have been dealing with a virus disease other than poliomyelitis, or that we have been dealing with poliomyelitis in addition to some other disease occurring in epidemic proportions. It is a well-known fact that poliomyelitis is a protean disease and that past epidemics have differed one from the other in many particulars. All previously recorded epidemics have had in common certain symptoms and signs which make it seem proper to class them as examples of one and the same disease. The same can be said for the disease that we have described and until there is adequate proof that we have been dealing with a new and previously unreported condition, we prefer to consider our cases as examples of poliomyelitis. We have seen recently a sufficient number of mild cases confirmed by spinal fluid findings to incline us very strongly to the view advanced by Paul and Trask[1] and others, that certain "characteristic types of minor illness which accompany an epidemic of poliomyelitis, probably represent mild cases of the disease."

It is to be regretted that some serious study attempting to prove or disprove an epidemic of poliomyelitis in this State has not been undertaken. If a new disease can be proven the writer will feel grateful for the opportunity of having observed and studied after a fashion a considerable number of patients so affected.

CONCLUSIONS

One hundred and eleven cases have been described which have had sufficient similarity to previously reported epidemics to stamp as poliomyelitis a recent outbreak of disease occurring in

Charlottesville, Va., and adjacent territory. Laboratory data and clinical evidence is supplied which warrant the assertion that in epidemic times normal cytology is no proof that the case in question is not one of poliomyelitis. The finding of increased protein in the spinal fluid is of great diagnostic value and in this series of cases, for practical purposes, has been a constant finding and a very material aid in the diagnosis of early cases.

We cannot consider poliomyelitis solely in terms of its neurological manifestations as is the current medical tendency. We think it proper to consider this disease as a systemic disease with neurological manifestations in the majority of instances. To think otherwise precludes the probability of diagnosis of early abortive and non-paralytic cases and interferes very materially with a proper conception of its probable incidence.

We are unable to suppose the presence of a new disease as has been frequently suggested and feel that this thought may well be the natural reaction of many physicians experiencing for the first time an epidemic of poliomyelitis in all its manifestations. The low death rate and the infrequent occurrence of muscle weakness and paralysis suggest the hope that poliomyelitis may be fast becoming a less malignant disease.

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POLIOMYELITIS—DIAGNOSIS OF THE VARIETIES.*

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We do not contemplate advancing new diagnostic criteria but rather briefly discussing the less common types of poliomyelitis which may be confused with other infectious diseases of the brain and cord.

Freeman[1] has made a very simple classification of the encephalitides in which he has grouped the causative agents. Those non-suppurative conditions affecting the brain and cord which are due to a virus have been included in the polio-encephalitic group. These embrace poliomyelitis, epidemic encephalitis, rabies and herpes zoster, all of which affect chiefly the gray matter of the central nervous system but each individual disease having a site of predilection except in unusual cases. The locations involved are the basal ganglia, inter-brain, mid-brain, the nuclei of the cerebellum, pons, medulla, the gray matter of the cord and the ganglia. Herpes zoster very rarely involves the system above the brain stem and is principally a ganglionic and peripheral disease. The presence of pain without paralysis, the herpetic eruption, the rarity and sporadic occurrence should cause no difficulty in differentiation from poliomyelitis. Rabies, though rare in the human being, may involve the basal ganglia, inter-brain, mid-brain and nuclei of the cerebellum and has a greater selectivity for the medulla and pons than poliomyelitis. It is also a disease primarily of the ganglia and peripheral nerves, having its entry into the nervous system through the peripheral nerves. Its rarity and the history of having been bitten by a dog are sufficient to easily differentiate it. Epidemic encephalitis seldom involves the spinal cord in such a way as to be confused with poliomyelitis because the encephalitic symptoms occur as a rule over a long

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period of time and the diagnosis becomes apparent. One of us reported in 1933[2] a case of encephalitis with poliomyelitic involvement, in which lethargy existed for four weeks, developing a flaccid paralysis of the left shoulder group of muscles.

The classification of poliomyeltis should be brief but descriptive. A number have been reviewed and the following combination of all of them is believed to be descriptive and practical:

1. Spinal, including the so-called ascending Landry's type.
2. The pontine bulbar type, often accompanying the spinal variety.
3. The encephalitic type.
4. The cerebellar nuclear type.
5. The non-paralytic type.

The question of the so-called abortive type deserves discussion. From the public health standpoint of transmission of the disease the inclusion of this type has value in preventing to some extent the spread of the disease. We are not convinced that every case diagnosed as abortive carries the virus, for this to be true. neutralization tests must be positive and the virus recovered from the nasopharynx. The symptoms upon which the abortive cases are diagnosed are the constitutional symptoms of the ingestion of any infectious disease. If the virus present in the nasal secretions produces immunity, then these cases may be better termed "vaccinated." Should we accept the idea of an individual acquiring immunity without having had poliomyelitis we might carry through the thought that the non-paralytic type (showing definite spinal fluid changes) had previously acquired some immunity, though not sufficient to prevent invasion of the nervous system, yet enough to prevent structural damage. The factor of the virulence of the virus being attenuated must also be considered in the non-paralytic group.

The diagnostic criteria for poliomyelitis in general are based on (1) the sudden onset or period of invasion, usually one or two days, though an occasional case may present constitutional symptoms four to six days before other signs appear. During this period headache, malaise, disturbances of the upper respiratory passages or gastrointestinal upsets and slight temperature are present. Neurological signs are absent. At this point twenty-four to forty-eight hours are necessary, as a rule, to distinguish it from other neurological infections. (2) The second stage reveals the presence of neurological signs which are purely irritative and consist of the meningeal symptoms; usually moderate rigidity of the neck without opisthotonos, moderate increase in all deep reflexes, and slight sensitivity to pressure on the muscles may exist. If there is edema and swelling in the cord and ganglia, the reflexes may be diminished or unequal, and there may be slight temporary muscle weakness. Occasionally the Babinski, Kernig's or other pyramidal tract signs may be present transiently. Should the disease stop here and the spinal fluid be pathological (i. e., increased spinal fluid pressure, increased cells and usually increased globulin), then we are justified in making the diagnosis of the so-called non-paralytic poliomyelitis. (3) The third stage gives evidence of destruction of the gray matter and paralysis of the muscles is partial, or, more often, complete. The reflex activity corresponding to the paralyzed muscle group is lost, pain in the affected muscles is present and persists for some days or weeks. Not infrequently the symptoms remain stationary for a day or two between the second and third stages; finally, the individual's resistance loses to the virulence of the disease.

Differentiation: In order of symptomatic appearance poliomyelitis must be distinguished, first, from meningitis. The degree of neck rigidity and extent of pyramidal tract signs are less in poliomyelitis and not inclined to progress; the absence of rash, and the cloudy spinal fluid in which there is a predominance of polymorphonuclear cells suggest poliomyelitis. There are two exceptions, first, tuberculous meningitis, in which the fluid is clear, usually lymphocytes predominate but the fluid sugar is low, whereas it is usually normal in poliomyelitis. The fluid in both conditions may yield a pedicle, which upon microscopic examination will in a fair number of instances reveal the tubercle bacillus. Tuberculous meningitis is more insidious in its onset except when ushered in by a convulsion. Convulsions rarely if ever occur in poliomyelitis.

The second exception is acute syphilitic meningitis, which, of course, is a rare condition and when occurring sporadically would offer no confusion in diagnosis, but should it occur in a period during a poliomyelitis epidemic the signs might not be sufficiently apparent during the first few days unless the Wassermann be positive. The course of the dis-

ease over a period of time, however, would clarify any doubt.

In different epidemics poliomyelitis seems to have a predilection of location in the central nervous system. In some epidemics there is a very large percentage of encephalitic types. Ordinarily poliomyelitis begins to display its destructive pathology in the lumbar cord and gradually ascends, either stopping in the bulbar-pontine region or skipping over and producing the encephalitic type with the consequence that somnolence and cranial nerve palsies are late symptoms. There is, however, an encephalitic type which displays symptoms as soon as the virus has been ingested in the nervous system; this is characterized by rather profound somnolence; the patient can be aroused but is usually irritable under such circumstances and desires to be let alone. A lower motor neuron type of paralysis of the facial nerve (Bell's palsy type) is the most common cranial nerve involvement but is usually persistent; the next in frequency is the abducens and more rarely the oculomotor and trochlear. Only a few cases of optic nerve involvement have been reported. In these cases the pathology is usually severe, the spinal fluid is under exceedingly high tension and there is a papilledema. As a rule, however, this clears up without much optic damage. In encephalitis the cranial nerve paralyses are more transitory, there are no residual paralyses and there is usually an absence of the pupillary accommodation reflex due to the involvement of the Edinger-Westphal nucleus. This does not occur in poliomyelitis.

Early encephalitic involvement is shown in the following case:

A white girl, age seven, was admitted on the fourth day of illness (diagnosis—meningitis). Initial signs first day—drowsiness; second day—mild fever and pain in back of neck and head and vomiting were added; third day—opisthotonos and right facial paralysis (peripheral Bell's type) were added; fourth day—opisthotonos more extensive; no physical signs except as stated; there were six cells in the spinal fluid; fifth day—symptoms the same plus questionable weakness of the right anterior tibial group and decrease in the knee jerk. In the evening there was slight convulsion of the upper extremities with marked opisthotonos; sixth day, morning—improved, facial paralysis less (diagnosis—encephalitis). In the evening—physical findings: somnolence, rigid neck, all deep and superficial reflexes pathologically increased but equal, positive left Kernig's sign, the facial paralysis having cleared up (diagnosis—meningo-encephalitis). Seventh day, morning—findings of the evening before checked; right facial paralysis had returned; there was more relaxation of the muscles of the lower extremities, other findings being the same. Cell count on the fluid—three lymphocytes. From this point on the patient improved, somnolence lessened, but a very slight weakness of the left anerior tibial group gradually developed. On the twentieth day all deep reflexes were increased, tibial weakness was not apparent unless tested for and the facial paralysis had improved 50 per cent. From the thirteenth to the fifteenth day a slight intestinal paresis was present. Under date of October the seventh, her father reports the existence of a partial facial paralysis and anterior tibial paralysis. At no time was the spinal fluid under increased pressure; on the eighth day it measured 6 mm. of mercury, the cell count was 21, one polymorphonuclear and 20 lymphocytes; the sugar was 71 mgm. per 100 c.c.; smear and culture were negative.

Discussion: Further history was obtained; three days before the initial symptom of drowsiness the child had a nasal discharge and sore throat. There was no infectious illness in this neighborhood. The predominant signs in this case were those of meningo-encephalitis. Were it not for the late appearance of anterior tibial paralysis, the question of poliomyelitis would never have entered into the diagnosis. The lack of increase of spinal fluid pressure and the low cell count in the face of severe neurological signs led us to believe that we were dealing with a case of meningo-encephalitis with the virus of poliomyelitis as the causative agent. We are, however, putting it in the poliomyelitic group.

The bulbar form usually accompanies the ascending or descending spinal form, more especially in those cases with cervical damage. When the respiratory center is involved death is instantaneous. Three cases with bulbar symptoms were seen in our group. One of them presented a very rare picture: a girl twelve years of age was admitted on the twelfth day of her illness with an isolated paralysis of the right palate which persisted on her discharge twenty days later. While in the hospital, however, there was a slight transient weakness of the left leg.

A case of transverse myelitis may be very confusing when occurring during an epidemic of polio-

myelitis. The paralysis is identical with that of poliomyelitis but in the latter disease there is no loss of all types of sensation and there is rarely, if ever, bladder or bowel weakness. Transverse myelitis is as a rule complete in twenty-four hours though sometimes forty-eight hours or longer are required. Further confusion may be added by the fact that occasionally transverse myelitis is ascending. The following case occurring during the outbreak in Richmond serves to illustrate this point:

A white boy, age seven years. Daily symptoms: First day—"lifeless"; second day—improved after a laxative; third day—pains in upper abdomen and vomited; fourth day—symptoms the same, more severe pain and headache; pain in neck and on swallowing; patient was hospitalized. The spinal fluid showed 18 cells, 70 per cent lymphocytes with no change in globulin, and the sugar was 61. Fifth day—spinal fluid showed 210 cells, 80 per cent (recorded as polymorphonuclears)?; sixth day—temperature 101; weakness in both legs, greater in the left than in the right; seventh day—there was slight rigidity of the neck and a band of hypersensitivity under the arms; in addition to the loss of use of both legs there was loss of sensation up to the level of the umbilicus; eighth day—there was rigidity of the neck with left traction; the band of hypersensitivity receded to just above the umbilicus; there was also bladder and bowel involvement and all lower reflexes were lost. Following this the anesthetic level rose to the nipple line.. By the twentieth day the sensory level was dropping and the patient had slight sensation in the left heel and up the side of the leg; the knee jerks began to return accompanied by slight motion of the left leg. The muscle function returned rapidly but not completely, care being taken to protect the foot drop which was the last weakness to disappear. At present there is slight muscle wasting below the knees, the lower deep reflexes are exaggerated and ankle clonus is present bilaterally. There is also slight bladder involvement. During the first few days of his illness 20 c.c. of convalescent serum was given intravenously and 10 c.c. in each buttock (diagnosis—acute transverse myelitis).

Not infrequently there is a severe reaction to the injection of sera and vaccines in which an acute hemorrhagic condition of the white matter takes place, sometimes extending into the gray matter. Occasionally this may for a day or two simulate poliomyelitis but it is later found that if the paralysis continues it is of the upper motor neuron type.

Summary: Only a few cases received convalescent serum; the use of it, however, did not appear to alter the course of the disease as compared to those who had no serum. Of the thirty-six cases, one case with quadraplegia and paralysis of the intercostals died. Below is an analysis of the paralytic involvement and a brief summary of the spinal fluid findings:

36 suspected cases—		100 %
Poliomyelitis—complete paralysis	11	30 %
partial paralysis	6	16.6%
non-paralytic	17	46.6%
Doubtful (not poliomyelitis)	1	2.7%
Transverse myelitis	1	2.7%
Summary of spinal fluid findings:		
Number of cases punctured	36	100 %
Cells under 10	3*	8.4%
Cells over 10	33	91.6%
Differential count—31 fluids		
Lymphocytes predominating	21	67.7%
Polymorphonuclears predominating	10	32.3%
Range of cells—0 to 450		
0-10	3	8.3%
10-100	23	63.8%
100-200	6	16.6%
200-300	2	5.5%
300-400	1	2.7%
400-450	1	2.7%

*Fluid on one of these cases done on the thirteenth day of the disease.

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DISCUSSION OF PAPERS BY DRS. WADDELL AND PURCELL AND BY DRS. MASTERS AND SUTTON

DR. WYNDHAM B. BLANTON, Richmond: It is my impression that our recent outbreak of poliomyelitis in Virginia was unusual. It was characterized by an early seasonal onset and an early peak, by mildness of symptoms—there were few cases of paralysis and few deaths—and by a later age incidence. A very similar outbreak occurred a year ago in California, where the same unusual features were noted, and where the opinion prevailed that they were dealing with a changing disease. I believe poliomyelitis is the same disease it has always been. We are simply learning to recognize it in the pre-paralytic stage.

The next point is: Can poliomyelitis in the abortive or pre-paralytic stage be diagnosed in the absence of cellular increase in the cerebrospinal fluid? Is an abnormally high protein content early in the disease a con-

stant finding and can it be depended upon in diagnosis? Dr. Waddell thinks so and has presented some interesting evidence in support of his views. His findings, however, are at variance with all other previous spinal fluid studies I have been able to find in the literature. They do not agree with the results obtained among our poliomyelitis cases at the Memorial and St. Philip's Hospitals during last summer. I have briefly summarized the spinal fluid findings in these cases.

Total number of cases	31
No. with cells above 12	29
No. with cells above 20	24
No. with cells above 50	17
No. positive for globulin on admission	4
No. positive for globulin on second examination	6
Total number positive for globulin	10
Total number negative for globulin	18

From this series of cases there is nothing to indicate that the protein of the spinal fluid is of early diagnostic value.

Dr. Waddell's findings should lead others to attempt to duplicate his results. I, for one, should like to have such an opportunity.

Dr. Waddell's paper raises at least two important points: First, did we have an epidemic of acute poliomyelitis in Virginia last summer? Dr. Waddell saw 111 cases in the outpatient department of the University Hospital and estimated that there must have been at least 1,500 cases in the city of Charlottesville and the county of Albemarle. The State Board of Health had reported to it from all of the counties of Virginia during the months of June, July, August and September, 647 cases. Now, if the same proportion of estimated to reported cases be applied to the whole State it can readily be seen that we may have had in Virginia as many as 6,000 cases of poliomyelitis during the past summer. It remains with the epidemiologist, however, to say when an epidemic is an epidemic. Those who have been telling us in the popular press that we did not have an epidemic of poliomyelitis have evidently not been conferring with Dr. Waddell.

DR. ANDREW D. HART, JR., Charlottesville: As to the incidence of this disease in Albemarle County, I should like to corroborate Dr. Waddell's clinical impressions. Although I did not have the opportunity to observe a great number of cases I did see fifty-five private patients with the disease. We were dealing with a distinct clinical entity, certainly not observed in this locality before in such proportions. The spinal fluid findings in the early stages of the disease were not conclusive and often of so little value as to make the examination useless during the first day or so of the illness. As regards the clinical features of the disease, the headache, I thought, was most prominent. This symptom, however, as well as stiffness of the neck, frequently disappeared within a few hours. In the morning a patient might present a markedly stiff neck, and by afternoon no sign of this feature be demonstrable.

As regards recurrent cases, one patient was recently seen at the University Hospital who gave a clear history and physical findings of a previous attack of poliomyelitis. The present attack seemed as typical as any instances here reported. I understand that several examples of recurrent poliomyelitis have been published elsewhere.

I do not think this disease has changed particularly. We do not have sufficient information on previous epidemics to prove that they have differed from this one. Certainly, if past epidemics of poliomyelitis have been studied generally with no more concerted effort than in this present outbreak, the reports are not conclusive.

DR. ALEXANDER GILLIAM, U. S. Public Health Service: There are several things about Dr. Waddell's paper which I think might bear some more emphasis. In the first place, the word "poliomyelitis," as descriptive of what the Germans call Heine-Medin's disease, is in a way, as unfortunate as the layman's term of infantile paralysis—unfortunate because it implies necessary involvement of the anterior horn cells just as infantile paralysis implies a disease confined to young children and always paralytic.

When one sees a patient in the first stage of the acute illness, with fever, pain, nausea, vomiting, stiff neck, etc., it is impossible to tell whether the case is going on into paralysis or whether the symptoms will subside and no paralysis develop. This was recognized as early as 1905 by Wickman, and is just as true today.

Another point as to the spinal fluid findings. The impression has grown, largely from the work of the New York investigators, that you can tell from the spinal fluid whether the case will go on into paralysis or not. Dr. Waddell has shown that is not true.

As regards the situation in Charlottesville: I was in North Carolina during the first part of the outbreak this summer, where they were having so-called classical poliomyelitis. The paralysis rate was running about 90 per cent. The outbreak in June spilled over into some of the southern counties in Virginia, with a similar clinical picture and a relatively high paralysis rate. Early in July there began to be reported in Albemarle County a large number of mild, non-paralytic cases. I saw a number of these cases, and from the clinical point of view there was no distinguishing of them from the cases that go into paralysis.

From the epidemiological point of view, however, there were certain differences. In the first place, I know for a fact that there are a number of places in Virginia where paralytic polio occurred—not in epidemic, but in unusual proportions, and where the same situation that existed in Charlottesville did not exist. There were other epidemiological features that seemed to be different. Despite the fact that in the last twenty years there has been a shift in the age distribution until proportionately more older persons are affected, there seemed to be in Charlottesville, a higher percentage of cases in the adult group; the paralytic rate was low; and other factors made it seem possible that two diseases were operating in that community. The State and local health depart-

ment, with the cooperation of the United States Public Health Service, obtained nasal washings, spinal fluid, and blood from a few acute cases, which were inoculated into monkeys and mice. No virus pathogenic for these animals was recovered from these different fluids. That the polio virus was not recovered is not surprising, since the technical difficulties of the test make it usually impossible to obtain virus from nasal washings when the disease is typical flaccid paralysis. Because acute lymphocytic choriomeningitis caused by E virus gives a clinical picture similar to non-paralytic poliomyelitis and because indications of its occurrence are relatively easy to show, it seemed worthwhile to collect sera to test for E virus protection bodies. With the cooperation of the Health Department we secured specimens of convalescent blood from about forty cases in Albemarle County, and they did not show neutralizing bodies for E virus.

Of course, all the epidemiological evidence in polio is that something similar to this occurs quite frequently, that infection not resulting in clinical illness is much more common than infection resulting in clinical illness. The situation in Charlottesville is unusual when considered in light of what happened in the State as a whole, and the State Health Department has taken steps to study in detailed manner such as never before attempted, other sections in the State. But the incidence of cases that can be clinically diagnosed as polio, accepting for the moment Dr. Waddell's estimate of 1,500 cases, with such a low paralytic rate, is extremely unusual.

The disease in Charlottesville may not have been predominately polio, but I think the burden of proof is on those who say it was not.

DR. ALEXANDER F. ROBERTSON, JR., Staunton: I have been very much interested in Dr. Waddell's reports on the experiences at Charlottesville, and I think they lead us to two conclusions: one, that they had a most unusual epidemic in Albemarle County, and, second, that a good many cases must have been missed in other parts of the State. There are certain symptoms that he gave on his slide which might be perfectly characteristic of any acute infectious disease; and there are also certain characteristics which I personally and, I think, a good many of us have carried in our minds in making the diagnosis of polio. The thing I would refer to particularly would be, of course, paralysis, abnormal changes in the spinal fluid, difference in the reflexes, and—especially important—a stiff neck or stiff back. I should like to ask Dr. Waddell what he would consider the minimum requirements for making a diagnosis of one of these mild cases of polio, especially where we cannot get the spinal fluid because the parents of the patient will not consent to having it done.

I also wish to call attention to one point. That is, if novocain is used in making the spinal puncture and a little fluid is not allowed to run out of the needle, we may get a false positive, in the interpretation of the Pandy test for globulin.

I should also like to get Dr. Waddell's views on the etiology of the disease, whether he thinks it is a contact disease or not,, whether any of his work gave him any inkling as to how it is carried about, whether any carriers were discovered, and, if any were discovered, how long they remained carriers.

DR. I. C. RIGGIN, Richmond: We are very much indebted to Dr. Waddell, Dr. Masters and Dr. Sutton for bringing their findings to us in such an able, concise, and clear manner. In connection with their papers, it might be of interest to review what has occurred in the State from the standpoint of the State Health Department.

Following the outbreak in North Carolina there was increased prevalence of poliomyelitis in the south central counties bordering on that state. From there the disease spread, more or less along the routes of travel, into almost every section of the state. The early cases showed the usual symptoms of poliomyelitis with paralysis or definite muscular weakness and the expected age distribution of between 70 per cent and 80 per cent of the cases under ten years of age. A peak was reached in the week ending July 20th. After a slight recession lasting about one week, a wave of cases showing no paralysis or muscular weakness started in Richmond and spread to the central and western part of the State. At the same time the age distribution changed until only roughly 60 per cent of the cases were under ten years of age.

Reports were sent to us of large numbers of unusual cases occurring in some sections of the State. In one county, for instance, several physicians stated that they had a hundred or more cases, and yet not one case developed paralysis or muscular weakness. They further stated that in these cases they did not feel the clinical course justified a diagnosis of poliomyelitis. The majority of these cases were up and about and apparently recovered in two or three days. However, the State epidemiologist, visited a great many of these cases and traveled in practically every county in the State investigating the situation. In two counties where these mild cases were especially prevalent, intensive surveys were made of a random sample of the population. Coincident with the survey, the National Institute of Health cooperated with the State Health Department in making possible laboratory work in connection with a good many of these cases and an equal number of control individuals. Since the tabulation of these studies is not yet complete and the laboratory work still in process, we are unable to give you the results of the investigations, but we hope to have some interesting information for you later.

In closing, let me restate that there has been a marked increase in the prevalence of poliomyelitis in some sections of Virginia and in certain counties the disease has reached epidemic proportions. However, there has not been a State-wide epidemic of poliomyelitis in Virginia in 1935.

DR. BERNARD H. KYLE, Lynchburg: I certainly enjoyed Dr. Waddell's paper, and the discussion has been very interesting. I don't think there has been anything par-

ticularly unusual about this recent outbreak of infantile paralysis or anterior poliomyelitis, which is the proper term, because we know it does attack adults, except that it is rather mild. I believe there are now more cases paralyzed in the State of Virginia or more that have muscular weakness than we had thought. If those cases were tested out by a physiotherapist who is trained in muscle examinations, especially if the cases were allowed to do weight-bearing and were massaged during the stage of hyperesthesia, I think we would find many more of them have muscle weakness. It is very difficult to tell, unless one is skilled in testing out muscles whether a child has muscle weakness or not. It is very easy to diagnose a case totally paralyzed, but where one of a group of muscles is weak, it makes the problem more difficult. I imagine that a great many of these children were allowed to do weight-bearing; probably many of them saw no physician at all. We know that weight-bearing and especially massage during the stage of hyperesthesia will increase the paralysis; in fact, the mild cases will change practically to a total paralysis, and as a rule, they will not come back. I also believe the cell count in a great many of these cases, if done at the proper time, would show globulin or increased cell count.

In Lynchburg we had about sixteen cases, I think, of which six were paralyzed and the others were not. These cases were seen early and plaster casts were applied to the legs. Most of them were both legs, or one leg and one arm. They were immediately put on Bradford frames and were not allowed to walk. These cases were kept in plaster casts for from six to eight weeks, then the casts were bivalved and passive exercises started. Many of them have greatly improved, will improve and continue to improve if they receive proper treatment which consists of no weight-bearing and proper physiotherapy—which is very difficult for these cases to get, because many of them are poor and not able to pay for it. If they were able to pay for it they probably could not get it, because there are not many skilled physiotherapists.

I certainly enjoyed Dr. Waddell's paper, and I think there is no question that this was an outbreak of anterior poliomyelitis. I think it undoubtedly was.

DR. WADDELL: I am very grateful for this excellent discussion, it has certainly added much to the subject.

As to whether these mild cases have occurred in past epidemics I do not know, but I believe in the past epidemics there must have been, along with the severe cases, a large number of cases such as we have detected. We were able to discover a large number of mild cases due to the energy of our corps of field nurses. A great many of these cases were brought in by our field workers and were brought in during the first forty-eight hours. That is why we had to do so many lumbar punctures.

Dr. Gilliam suggested that our age incidence is higher than in past epidemics. I do not think it is so much higher. We had seventy-four cases under twelve.

I should like to ask Dr. Blanton how late his lumbar punctures were done, because I think that makes a great deal of difference.

Dr. Gilliam, in talking about the cases in North Carolina, I believe said there were 90 per cent paralyzed cases. I think that must simply mean that the doctors did not report the mild cases. It seems to me that rate of paralysis is very high.

DR. GILLIAM: Of course, the rates vary. In the 1916 outbreak the rate of paralysis was practically 100 per cent. In Denmark in 1934 it was about 14 per cent. In Greensboro we questioned the mothers of approximately 900 children, and none of them had had this sort of thing. I know of one place in Virginia, where an unusual amount of paralytic poliomyelitis occurred, where we questioned the mothers of 250 children, and they had not had this sort of thing. There is just something queer somewhere.

DR. WADDELL: Isn't it true that as this disease is going North there is something unusual about it there? I have had opportunity to talk to a number of men from New York and Boston, and they say the incidence of paralysis is not unlike that here.

DR. GILLIAM: I don't know.

DR. WADDELL: Dr. Robertson, I think you have to have a certain number of these symptoms and signs to make the diagnosis, such as headache, vomiting, stiffness and pain in the back, etc. I don't think you have to have a lumbar puncture to make the diagnosis. I happened to see about twenty-five which did not have lumbar punctures, some of them paralyzed, some not. I think it was just as easy to make the diagnosis in them as in this group.

As to the mild cases, for thirty-six or forty-eight hours they seemed just as sick as those that were going to run five or six days. Does that answer your question?

As to the question of contacts, I think it must be a contact disease. We had quite a few families in which there were multiple cases in the family. We had one family in which there were five cases. That sounds like a contact disease to me. So far as I know, there is no experimental proof of this.

DR. MASTERS, closing the discussion on his part: In answer to Dr. Waddell's question about the time of the lumbar puncture, in the cases admitted to the Dooley Hospital most of them were done the second to the fifth day after the onset of the symptoms. In a few it was done after the fifth day. There was a gradual rise in the cell count up to the third or fourth day, after which there was a gradual drop. So many cases sent in as poliomyelitis suspects have a coryza and temperature of 99, and that is the end of the illness; they are well the next day. It is difficult to believe that everyone is an abortive type. Several cases admitted as suspects had medical or surgical conditions and were not included as suspects in this series. I think it would be interesting to investigate the health reports of the various communities and the State, in the years when there are an "average" number of poliomyelitis

cases and during an outbreak, to see whether the customary summer infectious diseases remain constant during an epidemic. It does not seem reasonable that the usual diseases should cease occurring in the average percentages even in the presence of an epidemic. While we had more cases of poliomyelitis in Richmond than usual, from a statistical standpoint the disease did not assume epidemic proportions.

COLLAPSE THERAPY IN PULMONARY TUBERCULOSIS.*

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Tuberculosis, once in the body, spreads by one or more of four methods, namely, by direct growth through the tissues, by the natural air passages, by the lymphatics, and through the blood stream. Tuberculosis is spread from one individual to another by the excretion from the diseased organ containing the tubercle bacilli.

Tuberculosis heals by one or more of three methods: by resolution, by calcification, and by fibrosis. Any form of therapy that will check or stop the first two, the dissemination into the body and the spread to another individual, and at the same time promote healing, would be an ideal form of treatment. This is what collapse therapy is designed to do—put the lung at rest and keep it at rest until nature can do its work.

The first to use physical rest in the treatment of tuberculosis was Peter Dettweiler, of Germany, in 1876. James Carson, of England, in 1842, was the first to suggest rest of the diseased lung, to be revived by Carlo Forlanini, of Italy, in 1882. It is interesting to know that Robert Koch, of Germany, in the same year discovered the tubercle bacillus. Forlanini published his first results of treatment of pulmonary tuberculosis by artificial pneumothorax in 1895. John B. Murphy, of Chicago, was the first to perform the operation in this country in 1898.[18] The treatment was not accepted by the medical world until the Congress at Rome in 1912.

Collapsing the lung may be attempted by one of five different methods: artificial pneumothorax, or the forcing of air into the pleural cavity on the diseased side, of which I will speak more later.

Pneumolysis, or the cutting of string-like adhesions between the parietal and visceral pleura which prevents a satisfactory collapse of the lung in pneumothorax was first attempted by Professor H. C. Jacobaeus, of Stockholm, in 1913.[3] The technique was improved and practiced very extensively in this country by Ralph C. Matson, of Oregon.[4]

Neurectomy or phrenectomy, the cutting of the phrenic nerve on the affected side, thereby paralyzes half of the diaphragm, permitting it to rise in thorax one to three inches, thus limiting the expansion and motion of the lung on the cut side and decreasing its vital capacity from 15 to 25 per cent, but the oxygen consumption is practically the same according to Werner.[5] This operation is indicated in selected cases where pneumothorax and pneumolysis have not been successful, and preceding thoracoplasty, and after discontinuing pneumothorax.

Thoracoplasty, or the removing of sections of the ribs or bony cage which surrounds the diseased lung, is done in order that the chest wall may be pushed in, thus putting the diseased lung permanently out of commission. This operation is indicated only in those cases where all other methods of treatment have failed, as prolonged rest with pneumothorax, or where pneumothorax cannot be induced on account of dense adhesions. The disease must be confined to one lung and the patient must be in a good physical condition.

Oleothorax, the injecting of sterilized oil or paraffine in the pleural cavity, is a method of treatment that has been fairly popular in France, but not in this country. The writer sees no advantage in using oil in preference to air, and the chances of empyema are greatly increased; you have a foreign body constantly irritating a sensitive pleura that sooner or later is almost compelled to become infected.

Pneumothorax, the most popular, the most bene-

*Read before the Norfolk County Medical Society, April 15, 1935.

X-ray pictures were presented demonstrating the different types of cases.

ficial and the least dangerous of any of the methods of collapse therapy, is the only method with which the author has had any practical experience.

Rist, of Paris, states that pneumothorax has done more towards the healing of pulmonary tuberculosis than all other methods combined in the past twenty-five years. Matson states that in his series of 1,700 cases, from 50 to 60 per cent are cured by pneumothorax alone, while, previous to its use, only about 7 per cent of all forms of tuberculosis were cured by rest and sanatorium care.[6]

Accepted by the medical profession at the Congress in Rome in 1912, this method of treatment became very popular as the following communications will show. A questionnaire was sent to twelve tuberculosis sanatoriums with a capacity of over 150 beds, to get a cross section opinion from the Atlantic to the Pacific: (1) When do you start pneumothorax treatment? (2) What percentage of your cases was getting this treatment ten years later? (3) What percentage of your cases are getting some form of surgical collapse at the present time?

Trudeau Sanatorium, Saranac Lake, started pneumothorax in 1912. In 1924 it was being used in 2.9 per cent of cases. In 1934 some form of collapse therapy was being used in 29.2 per cent of its cases.[7]

Cedarcrest, Hartford, Conn., started pneumothorax in 1915. Ten years later it was being used on 5 per cent of cases; in 1934 about 50 per cent of cases are getting some form of collapse therapy.[8]

The Kiefer Hospital and the Maybury Sanatorium, of Detroit, began using pneumothorax therapy in 1923; one institution opened in 1922. At the present time 83 per cent of their cases are getting some form of surgical collapse.

North Carolina State Sanatorium began pneumothorax in 1914. Ten years later they were giving it to 10 to 15 per cent of their cases; at the present time 70 per cent are getting some form of surgical collapse.[10]

Blue Ridge Sanatorium, Virginia, opened in 1920. About 12 per cent, all far-advanced cases, were started on pneumothorax. At the present 40 per cent are getting surgical collapse.[11]

Catawba Sanatorium, Virginia, began in 1913. Ten years later they were using it on about 10 per cent of their cases. At the present time 63.6 per cent are getting surgical collapse.[12]

National Jewish Hospital, of Denver, began using pneumothorax in 1914. Ten years later 20 per cent were getting this treatment; at the present time 60 per cent are getting surgical collapse.[13]

Rutland State Sanatorium, Massachusetts, began pneumothorax in 1917. Ten years later only 6.3 per cent were getting the treatment, while at the present time 69.48 per cent are getting surgical collapse.[14]

The Municipal Tuberculosis Sanatorium, of Chicago, began pneumothorax in 1916. Ten years later only 2 per cent were on this treatment; at the present time 61 per cent.[15]

St. Joseph's Sanatorium, of Albuquerque, New Mexico, began in 1923. At the present time only about 30 per cent are getting some form of surgical collapse.[16]

The Pottenger Sanatoria, Monrovia, California, began pneumothorax in 1919. At the present time they are using surgical collapse in about 34 per cent of their cases.[17]

A county sanatorium in California is using it in 65 to 75 per cent of the cases.

You will notice that the private sanatoria are much more conservative than the state and county sanatorium in starting collapse therapy.

At first, pneumothorax was tried only on advanced unilateral cases that had failed to respond to the rest cure, and in cases of pulmonary hemorrhage that could not be controlled. At present we feel that the following conditions should be given the benefit of pneumothorax treatment: any case of unilateral pulmonary tuberculosis with a positive sputum should be started as soon as possible; cases with cavity, pulmonary hemorrhage; in bilateral cases where one lung is in fair shape, collapse the most active lung; reduce the toxemia and the contralateral lung will begin to show improvement. In cases of pleurisy with effusion, remove the fluid and replace with air. In spontaneous pneumothorax, keep the lung down—the pressure negative—until the lesion heals. In acute pulmonary abscess, nontuberculous, and in pulmonary infarcts which are beginning to suppurate, the author has gotten 100 per cent cures where pneumothorax was started before adhesions formed. In bronchiectasis, selected cases of lobar pneumonia, and in malignancy of the lung, air is used to replace fluid and relieve pleuritic pain.

MECHANICS

In the beginning, pneumothorax was induced by forcing nitrogen in the pleural cavity. As nitrogen was so expensive and unhandy, as it had to be kept in large iron tanks, it was substituted by filtered air in 1914. According to Murphy pneumothorax reaps its benefit by immobilizing and enforcing physiological rest of the diseased lung, by enforcing drainage of the secondary products through the bronchi and allowing the ulcer or cavity to heal.[18] O'Brien states that rest to the lung causes a slowing of the lymph flow and a retarded circulation, which results in lessened toxemia and increased production of fibrous tissue. The normal respiratory cycle has an unfavorable influence on cavities and retards healing.[19] It is a known fact that physical rest to any diseased organ or tissue promotes healing. Rest in bed, restricts physical exercise to the lung, promotes easier, quieter breathing, and lowers metabolism. Collapsing a lung is the nearest approach to complete physical rest that one can secure for the lung.

O'Brien states there are only two reasons for not using collapse therapy in unilateral tuberculosis. One is where the lesion is so small that you are optimistic enough to believe that rest in bed alone will bring about a cure. The other is where the disease is so extensive that such a measure will not help.

My records show that in the past fifteen years I have treated one hundred cases of pulmonary tuberculosis with artificial pneumothorax, with only those cases included where a satisfactory collapse was secured. The youngest was fifteen years of age, the oldest sixty. Twenty-four of these are still getting refills, though several are clinically well. This leaves seventy-six, fourteen of which are known to be dead. Six had to give up treatment on account of adhesions, but were improved. Fifty-six, or 71 per cent, were discharged as apparently cured. This last figure is not entirely accurate as many of these cases were selected in a sanatorium as suitable cases for pneumothorax and took the treatment for some time before coming to me for refills on returning home. A few were transients and under my care for only a short while, the ultimate results not being known. Of the fourteen that died, three died of spontaneous pneumothorax. Two of these had their rupture while trying to crank an automobile. Two had empyema, one developing a year after discontinuing pneumothorax.

TECHNIQUE

It is best that all initial treatments be given either in a hospital or sanatorium as the patient may be kept quiet after the injection and checked by X-ray or fluoroscoped until the lung is well collapsed, after which the patient may be transferred home and the treatment continued. To induce pneumothorax put the patient on his good side with his affected lung uppermost. Elevate the arm above the head and put a small pillow under the chest, which will separate the ribs and pull the lung from the chest wall. Clean the skin well and with a fine needle anesthetize the skin, fascia and pleura, trying to select a clear space, usually the sixth or seventh interspace in the mid-axillary line. Use an eighteen gauge needle with a dull point and attempt to enter the pleural cavity. If you have succeeded, connect with the manometer. The oscillations will prove that the needle is in the pleural space. Do not force air in the pleural cavity until the fluid in the manometer moves up and down. The pressure in the pleural cavity is normally negative, that is, below atmospheric pressure. It may be from minus two to minus twelve or even minus sixteen. When you are sure you are in the pleural cavity, introduce from two hundred and fifty to three hundred c.c. of air, making sure to stop before the pressure becomes positive. The first few hours, the patient may complain of a tightness or fullness in the chest which soon passes off. In forty-eight hours repeat the performance, and again in seventy-two hours. This should then be checked with the X-ray, and, if the lung is fairly well collapsed, let the patient go home, continuing the treatment at about weekly intervals.

In case of pulmonary hemorrhage, I would give four hundred to five hundred c.c. of air at the initial injection according to the size of the chest.

Dangers of inducing pneumothorax:

First—puncturing a diseased lung and infecting the pleural cavity, producing an empyema.

Second—cerebral embolism. The needle may enter a vein, the air passing into the vein and then to the brain, producing in some instances sudden death. This was first called pleural shock. The patient usually complains of cardiorespiratory embarrassment, clonic and tonic muscular spasms and loss of

consciousness.[21] A lady of nervous temperament, age twenty-two, had twenty odd refills. Approximately fifty c.c. of air had gone in when suddenly she complained of feeling peculiar, of fullness in the head and chest, and wished to know if she were going to faint. She became semi-conscious, cyanosed, pulse very slow and full, and pupils widely dilated with slight twitchings. She was given aromatic spirits of ammonia and a hypodermic of adrenalin. In about twenty minutes she was apparently normal. I continued the treatment by making a fresh puncture. She had no subsequent trouble.

McCurdy reports a case very similar to this one. His patient died in one minute after the needle had been withdrawn, two hundred c.c. of air having passed in. An immediate examination of the eye grounds showed air bubbles in the retinal vessels, with large amounts of air in the right antrum and ventricles. Air bubbles were found through the cerebral vessels and inferior vena cava.[21] Numerous other cases are reported in the literature, both with death and recovery.

Third—breaking off the needle in the chest wall (this has happened to the author once, and he has punctured the heart once), with no bad results.

Complications

The most common are the collection of clear fluid around the collapsed lung and empyema. The author has had only one case of empyema during the time they were taking gas but many cases form fluid. In the early days about 50 per cent of pneumothorax cases had fluid to form around the collapsed lung. The cause is not known. At that time we used a large blunt Forlanini needle. This caused much trauma to the chest wall and pleura. After breaking one off in the chest, I discarded it for a smaller needle with a sharper point. This happened about ten years ago; since then I have had very few cases to form fluid.

There are three theories as to why fluid collects on the collapsed side: First, getting the lung too tight. Second, infecting the pleural cavity either from without with a dirty needle, or by scratching the diseased lung. Third, and I believe this to be the most plausible, the constant puncturing the chest wall and parietal pleura, causing irritation, the excretion of fluid being nature's method of trying to overcome this irritant.

Some think the collecting of fluid around the collapsed lung is an advantage as it helps to steady and holds the lung in a better state of collapse. If the quantity be small and not producing symptoms, it should not be disturbed. If the amount becomes large and causes discomfort, it should be removed and replaced by air.

The symptoms that accompany the forming of fluid in the beginning are quite characteristic and well-known to pneumothorax patients. In twenty-four to forty-eight hours after getting a refill the patient is taken with a headache, loss of appetite, nausea, sometimes vomits, aching and general malaise, with a sudden rise of temperature—hundred and one to hundred and two—which subsides in two or three days. In sanatoria circles this is known as a gas kick.

Disadvantages

Pneumothorax has to be given over a long period of time, making it rather expensive. Many cases with tuberculosis, that need pneumothorax, reside in rural sections, where the treatments cannot be obtained. Improved roads and transportation practically eliminate the second. As to the expense, when we consider how long most active cases of tuberculosis have to remain on the cure to get results, and that, when started early, pneumothorax treatment reduces this time, in a majority of instances, by one-half and in many instances even by less, it becomes an advantage.

Exercise

We know that rest is the most important thing in the treatment of any form of tuberculosis and cannot be over-emphasized. This also applies to pneumothorax cases, and should be insisted upon.

After the lung is well collapsed and stabilized, the mediastinum rigid, the patient becomes symptom free. The diseased lung is practically enclosed in a cage, and a moderate amount of exercise, such as walking and riding, will do no harm. I have patients that come twenty to forty miles to get their refills, often driving their own car, though I do not approve of this. I have warned them against any sudden or jerking exercise, such as swinging a golf club or tennis racket or swimming, as this might break a small adhesion, and tear the lung.

Once pneumothorax is started, when should it be discontinued? This has been a moot question from the very beginning and is still undecided. No definite criteria has been worked out on which one

can determine when to stop treatment. Tuberculosis is known to be an insidious disease. It heals even more slowly than it develops. Most students of the subject say never under two years, though six months may bring about much improvement; Rist says from three to five years. Heise, of Trudeau, states that he has one case that has been getting refills for fourteen years.[7] My personal feeling is that three to four years should be sufficient for fibrosis or resolution to take place, though several of my cases have been taking the treatment for over seven years. In those beyond fifty years of age, I believe that the lung should be kept in a state of collapse indefinitely, as their lungs do not seem to have the same healing power, or "comeback," as that of younger individuals. The patients, once the lung is collapsed and they are doing well, hate to give up the treatment, for they know what it has done for them. We usually reach a conclusion by study of the type of lesion before gas is given. The general condition of the patient, temperature, pulse, gain in weight, the X-ray film, study of the leukocyte count, differential and sedimentation rate, done at regular intervals, I believe will yield much valuable information.

CONCLUSION

Pneumothorax offers the quickest, safest and best way of rendering the sputum negative for the tubercle bacilli and putting the patient on his feet in a position to earn a livelihood. Society has very little love for a consumer and a non-producer.

Pneumothorax is being universally used, as a correspondence with sanatoria through a cross section of the country shows, the private sanatoria being more conservative in their view.

With this form of treatment from 50 to 70 per cent are clinically cured, where formerly only 7 to 10 per cent of all types were cured by rest and ordinary sanatorium care. If the patient so desires, the treatment may be given at home. Several of my cases never saw a sanatorium. But I consider the better way is to first enter a sanatorium and learn what it means to take the cure. Have the lung collapsed, if it be a suitable case, and remain until it is stabilized, which usually takes only a few months. Then return home to continue the treatment even though they have to travel several miles to obtain the refills.

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DISCUSSION

DR. FRANK HANCOCK: There is a universal enthusiasm for collapse therapy. The medical profession, having sat supinely by through the ages while this most insidious and intractable of all diseases, save cancer only, has mutilated the ranks of mankind, now steps boldly forward with a direct, frontal attack upon tuberculosis.

Barnes and Barnes reported sometime ago 1,484 cavity cases in which the mortality rate was 80 per cent for the first year, 90 per cent in five years, and an average length of life from twelve to fifteen months.

The rest and food and a kindly environment haven't been sufficient to restrain the disease's advances. Then came the Italian Forlanini, as related by Dr. Harrell, with his epochal accomplishment of pneumothorax.

This device for a long time was tried so late in the disease that not more than 15 per cent of such attempts were successful, the pleural spaces having coalesced, or become obliterated with adhesions.

It was a repetition of the procedure in appendicitis years ago, a retardation that was fatal to the patient.

Reports from the large tubercular hospitals now are to the effect that an incipient case that hasn't improved in three to five months is given pneumothorax.

A case receiving collapse therapy has a 3 to 1 better chance of living than one who does not.

Authorities say that every case of advanced tuberculosis has at one time or another been susceptible to collapse therapy.

It is a fair assumption that had they received it the disease would not have progressed in their cases.

When pneumothorax does not properly close a cavity after a reasonable length of time, because of adhesions, an adjunct operation known as pneumolysis is done, sometimes with brilliant results, the lung collapsing promptly with the severance of adhesions.

An evolutionary step in pneumothorax known as bilateral pneumothorax has taken place in the past few years.

In the second pneumothorax about 25 per cent as much gas is given as in the first lung. Naturally such a procedure requires keen and experienced judgment.

It is pleasant to contemplate that advanced tuberculosis will become less and less frequent and will finally disappear as these methods of surgical attack progress.

DR. C. CARROLL SMITH: We all recognize the fact that the rest, immobilization, and compression provided by surgical procedure in the treatment of tuberculosis are but an aid towards Nature's own efforts at healing tubercular lesions. Rest and conservation of energy are just as important today as they were when first advocated by Dettweiler in 1870 and surgical efforts are made to bring about local rest of the affected lung and thereby shorten the period of convalescence. It is still conceded, I believe, that a diminution in the size and a relative immobility of the affected side, as is often seen in chronic fibroid tuberculosis, denotes resistance on the part of the patient. So any effort to simulate this picture would seem to have a rational basis. However, there is another benefit which arises from such procedures. It has been pointed out by several observers that there is produced an alteration in the blood and lymph circulations of the diseased lung which diminishes the general intoxication of the body and favors healing of the local lesions.

Few dispute the fact that of all the auxiliary forms of treatment artificial pneumothorax is the most valuable. There are only two of these procedures with which I have had more than a speaking acquaintance, phrenic nerve operations, and thoracoplasty.

It is difficult to properly estimate the value of phrenic nerve operations because opinions as expressed in literature vary greatly. Alexander, Koch, and Wirth advocate the performance of such an operation before the institution of a pneumothorax. Wirth and Von Jaskin seem to prefer the operation to a pneumothorax and employ the latter procedure only in those cases where an incomplete collapse is obtained or the nerve operation fails.

Graham states that there can be no doubt that phrenicotomy has failed to justify the expectations of many and believes that its popularity is due to the simplicity of the operation. It is not without some danger. Berry has collected 4,697 cases of phrenic nerve operations done in the last five years. In fifty-seven (1.2 per cent) complications occurred, twenty-six (0.5 per cent) being fatal—six died of hemorrhage.

None the less, phrenicotomy has a definite place in the treatment of tuberculosis. It is a method of choice in lower lobe lesions when pneumothorax is impossible or after it is found that pneumothorax fails to accomplish the desired result; it is definitely indicated as a supplementary operation for incomplete pneumothorax, especially where there are adhesions between the lung and diaphragm, and works very nicely in collapsing some thin-walled cavities. It probably has a salutary effect in cases that show a sharp reaction following each refill; it seems to increase the interval between refills, checks the recurrence of pleural effusions, and is indicated at times to check hemorrhages. In cases that have responded well to pneumothorax and are ready to allow the lung to re-expand phrenicotomy can be used as a safeguard against re-activation, and it undoubtedly at times allows relaxation of adhesions that prevent satisfactory collapse of a cavity.

Thoracoplasty is the most drastic of the destructive operations used in the treatment of pulmonary tuberculosis, and is applicable to only a small group of cases—according to Ochsner:

1. The tuberculosis must be predominately of the fibroid type.

2. The process should be limited to one lung. It is, of course, appreciated that pulmonary tuberculosis is never strictly unilateral.

3. A return in function in the worse lung is not expected.

It is to be used in those patients who have already demonstrated an ability to help themselves and who have reached a stand-still after a fair trial of more conservative methods.

In conclusion, I would like to call your attention to the report of Overholt and Pilcher on changes in venous pressure after thoracoplasty. These investigators seem to have a rather convincing argument that such observations are of value in estimating the extent of rib removal that is consistent with a margin of safety in convalescence, and also as a factor to be considered in deciding on the time for a second operation.

THE PRESENT STATUS OF PHYSICAL THERAPY IN THE PRACTICE OF MEDICINE.*

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The employment of physical energies forms an essential part of present-day treatment of diseases, injuries and new growths. Heat, light and mechanical energy can be conveyed to the human body through the means of radiation, electrical currents and mechanical manipulation or devices and exert therapeutic effects to one part or the entire body.

1. THE EVOLUTION OF PHYSICAL THERAPY

Physical methods of treatment are as old as mankind, for the injured primitive man instinctively bathed his wounds, rubbed sore muscles, lay in the sun. Hot springs and pools have been Meccas for arthritics since ancient times, the world over. Keen observers, not at times necessarily medical men, developed the curative application of certain physical measures such as hydrotherapy, sunlight, massage. Those of a more mechanical bend of mind became interested in apparatus producing mechanical or electrical effects. Most of these ministrations were employed on a purely empirical basis and the rank and file of medical men were little interested in them. The first large scale coordinated use of all forms of physical therapy during and after the World War, for the treatment of millions of diseased and injured under the watchful eyes of the medical profession, marked a turning point in the development of physical therapy in this country. The results forcibly demonstrated their value to those who had not before seen physical therapy of this kind. Rationalization of time-proven methods, discovery of newer ones, many types of efficient apparatus offered welcome adjuncts to modern medicine and surgery. Systematic research work in physical methods on a par with that in other departments of medicine took the sting of empiricism away; hospital and teaching departments of physical therapy under competent medical leadership enabled the further development and demonstration of physical methods.

The most important step in securing for physical therapy a rightful part in the practice of medicine and surgery was the creation of a Council on Physical Therapy by the American Medical Association, on the lines of the Council on Pharmacy. This Council has made its influence felt where it has been most needed, in advocating basic training in medical schools and in post-graduate courses to the general profession, also in curbing commercialism and unwarranted claims for apparatus. The findings of the Council are frequently published in the *Journal of the American Medical Association,* and there appear also articles from other sources reporting on patient research work in various phases of physical medicine, as, for example, artificial fever treatment by various methods, ultra-violet therapy, and so on. A large, comprehensive handbook on all physical methods—The Principles and Practice of Physical Therapy—has been published. Medical men specializing in or generally interested in physical therapy have united in the Congress of Physical Therapy which meets as a national body as well as in regional gatherings and issues the *Archives of Physical Therapy, X-Ray and Radium.*

In the face of all these advances and the recognition of the importance of physical therapy in the modern treatment of disease and injury, it behooves the medical profession everywhere to become fully informed about its possibilities as well as its limitations. If through ultra-conservatism the "regular" physicians will not give their patients the benefits of indicated physical therapy, these often lose no time in getting it from irregulars. Well-directed physical therapy is the best answer that the medical profession can give the inroads of the cults.

In the stage of transition from a medical profession indifferent or even hostile to physical therapy to one actively interested there are many problems and pitfalls. One of these are the salesmen of apparatus or itinerant lecturers hired by manufacturers who pose as sources of infallible wisdom; another one are nurses or technicians who, after possibly having had good initial training in the technique of physical therapy under competent direction become the virtual heads of physical therapy depart-

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ments in institutions where no one of the staff cares to undertake the responsibility of actively directing its work. Some of these technicians in a later stage become independent practitioners on the outside, competing with qualified medical men. Physical therapy seminars, under the auspices of County and State Medical Societies, training courses given to individual physicians in post-graduate institutions, are the only means to overcome gradually the lack of basic training and experience of the older generation of physicians and to secure better cooperation for competent members of the profession practicing physical therapy.

2. Physical and Physiological Basis of Physical Measures

The human body is a complex transformer of energy. Chemical energy stored up in food or in drugs is split up into component molecules and serves to keep up or modify physiological functions in the body. Physical energy such as heat, electrical action currents in organs, is created by some of these chemical processes and is of similar vital importance. Physical energy can also be conveyed to the body from the outside through physical therapy methods. Any form of physical energy applied to the human tissues exerts first a primary physical or chemical action and this, in turn, affects cellular activity in some way or other, producing "secondary" physiological effects. These secondary physiological effects serve to influence a pathological condition either locally or generally and thus create therapeutic effects.

In applying physical measures it must be evident at once that whether a beneficial or detrimental effect is produced depends upon the quantity of energy applied as well as upon the quality. "Unless the energy is measured in a proper way and unless we have found out how much is needed to accomplish the desired effect in the individual, we cannot expect to obtain good results" (Stenstrom).[1] The quantitative or measured conception of physico-physiological effects is established by painstaking clinical and laboratory research work and is the main factor in gradually elevating physical therapy procedures from an empirical stage to that of a well-defined scientific procedure.

The classification of the various physical measures is a somewhat involved problem for, no matter on what basis it is done, there will be overlapping. For didactic purposes and for institutional classification heading under each physical agent—such as electrotherapy, hydrotherapy,—has proven practical. In such a classification the same agent, according to its form of application, may exert a variety of physical and physiological effects. For a broad conception of basic effects, a grouping of physical measures according to their primary physical effect is more informative. This brings together physical agents of a different nature—electricity, water, light—but shows that their effect is based on a similar principle. A brief summary of physical measures under this grouping is as follows:

(a) *Thermal Measures.* Heat can be conveyed to the body by conduction—hot water bottles, hot compresses,—by radiation—heat lamps and infrared generators,—and generated in the body itself by a high-frequency electric current—diathermy. From whatever source heating of the body originates, it will be the endeavor of the heat-regulating mechanism of the body to dissipate as much as possible of the excess heat. This is done by means of active vasodilation of the capillaries and subsequent increase of arterial and venous circulation. Lewis[2] has shown that irritation of the tissues by the application of heat produces a release of vasodilator substance—histamin—which in turn results in the dilatation of the capillaries. Upon the absorption of the vasodilator substance a greater proportion of the capillaries becomes active instead of the few which carry blood under normal conditions; as a result, a greater blood supply to the part occurs. This local hyperaemia in turn brings about an increase of local nutrition, increase of the rate of removal of local tissue products and stimulation of the local resistive forces for infection. According to the temperature law of Van't Hoff, for every rise of 10° C. the rate of oxidation is increased twenty-five times, and hence an increase of even fractions of a degree will enhance tissue metabolism to a marked extent.

The principal physiological effect of local heating is therefore an increase of circulation and nutrition. This makes heat measures valuable therapeutically in subacute and chronic inflammatory conditions; it also results in itself in speeding up of the process of restoration and lessening of pain caused by the pressure of excess material. But heating has also another important physiological effect in lessening neuromuscular sensibility; hence the em-

pirically well-established application of heating to relieve irritative conditions of sensory nerves (pain) and of motor nerves (spasms and cramps). There is no generally accepted explanation for the pain-relieving effect.

It is evident that the more penetrating the heating, the more effective will it be on deep lying structures. The popularity of diathermy in recent years in the treatment of chronic inflammations of inner organs, of joints and bursae, in congestive lung conditions, in cases of neuritis, is based upon these physiological effects. On the other hand, since there is no essential difference in the action of heating from external sources, there is no reason why in affections of superficial structures, accessibly located muscles and tendons, the much simpler and safer form of heating from radiant sources should not be preferred to diathermy. Many unnecessary burns and other mishaps in recent years could have been prevented had neophytes in physical therapy abstained from applying diathermy without rime or reason for many of the conditions where infra-red radiation would have proved just as effective or even more so with a minimum of risk.

General heating by baths, heat radiation and newer forms of high-frequency electricity known as radiothermy or general short-wave therapy brings about marked systemic changes. It has been employed for years in its milder extent in treatment of chronic rheumatic conditions and some circulatory disturbances. In the form of fever therapy it has become the center of interest in recent years and has led to a new conception of the significance of fever as an active defense factor. It has been generally accepted that in the clinical result achieved the sustained heat production in the body is the important factor and that fairly uniform results can be achieved by a variety of methods. In spite of extensive research work, the scope and best technique of artificial fever production is still unsettled. In its present stage it is a strictly institutional procedure and has given especially encouraging results in chronic afebrile pathological conditions such as degenerative diseases of the central nervous system, including early neuro-syphilis and in gonorrheal affections of joints and pelvic organs. Local short wave and ultra short-wave diathermy, now unfortunately publicized the country over as local radio fever therapy, also lacks final evaluation. Short-wave diathermy oscillations from fifteen to thirty meters are similar in action to ordinary diathermy (300 meter waves); the principal difference claimed is a more uniform heating in the depth. For ultra short-wave diathermy selective bactericidal action and applicability in acute suppurative processes are claimed by its German advocates; no corroboration from competent American authorities has come so far.

The inherent danger in all forms of heat treatment is that of local burns once heating is carried beyond physiological toleration which will vary in individuals and in pathological conditions. Well controlled excess heating of tissues, on the other hand, has led to the development of modern electro-surgical methods which have come to fill a definite role in both major and minor surgery and have made possible some remarkable advancements in surgical technique. The three major varieties of electro-surgical effects are: (1) Electro-desiccation, the simple drying of tissue on the surface by small sparks; (2) electro-cutting, fine coagulation along a line of cleavage; and (3) electro-coagulation, a massive coagulation around the operating electrode. Some of these effects are interrelated and best results are accomplished by their skilful combination, as, for instance, employing the coagulating current for instantaneous destruction and for the sealing of small blood-vessels and the cutting current for incision or excision and the sealing of capillaries.

(b) *Frigorific Measures.* The application of *cold* as a therapeutic measure is based on its physical conception of being a negative condition, depending on decrease in the amount of the molecular vibration that constitutes heat. The local effects of cold are a contraction of the cutaneous vessels; this explains the time-honored uses of cold packs and ice-bags for relieving local inflammation; it not only dimishes pressure on inflamed nerves but also acts as an analgesic. Thus both heat and cold may serve as analgesics.

The general effects of cold depend on the mode of application. Sudden short cold procedures after an initial vasoconstriction produce a cutaneous vasodilation, a feeling of warmth and a general stimulation of body physiology such an increased respiration, a rise in blood pressure, an increase of the amount of urine and a marked leukocytosis. This cold "reaction" is an essential part of many invaluable hydrotherapeutic procedures which should

be more frequently employed in acute febrile diseases and in neurovascular conditions.

(c) *Photo-Chemical Measures* in physical therapy are represented by the ultra-violet radiation obtained in sunlight and in artificial sources of radiation, mercury vapor and carbon arcs. When Finsen first cured lupus with a carbon arc lamp, from the radiation of which heat rays were filtered out by running water, he thought that the ultra-violet rays acted as a bactericide; now we are of the opinion that the curative effect is rather due to a photo-chemical stimulation of the tissues resulting in a profound inflammatory reaction. Direct bactericidal action of light can be exercised only in infections located strictly on the surface. With one or two exceptions artificial sources of ultra-violet energy emit only a minimal amount of radiation in the bactericidal range.

The principal effects of ultra-violet on the skin are manifested by dermatitis, pigmentation and activation of cholesterol; those on the general organism are manifested by changes in the blood serology and metabolism and in a general feeling of well-being. Extensive laboratory and clinical work has clarified both groups of effects in recent years. The mechanism of the action of ultra-violet on mucous membranes is not well comprehended and there is not adequate theoretical explanation available of the undoubted clinical results in both acute and chronic inflammatory processes. The fact that in the treatment of such a seemingly localized condition as tuberculosis of the larynx many of the clinicians emphasize the benefit of general body irradiations rather than those locally applied is worth noting.

There exists definite evidence that various wave lengths of the ultra-violet spectrum exert specific effects but no one has been able to use a sufficient intensity of these "filtered" wave lengths to be therapeutically efficient. Indeed, no one has used even pure ultra-violet radiation as yet, since all the available generators of ultra-violet radiation give off a considerable amount of infra-red (heat) and visible radiation, the physiological effects of which are different from that of ultra-violet.[3] Nature's blending of radiations in "Old Sol" may be, after all, the most desirable form of radiant therapy. Ultra-violet effects appear to be equally well produced by radiation from such different sources as natural sunlight, mercury vapor or carbon arcs. As to artificial sources, outside of the necessity of producing a skin erythema within a given period and at a standard distance, convenience is the only criterion which determines the type of lamp to be chosen.

(d) *Electro-Chemical Measures* are represented by electrical currents of constant flow—the galvanic current—and by currents of alternating flow at low tension—the sinusoidal galvanic and other "low-frequency" currents.

The time-honored galvanic current causes mild electro-chemical stimulation at the site of the electrodes and mild heat, better nutrition and acceleration of local metabolism in the area between them. These effects lend themselves somewhat to parallel the temporarily more popular therapeutic use of diathermy for the speeding up of resorption of inflammatory products and stimulation of function in selected cases of traumatic conditions, arthritis and neuritis.

Iontophoresis, or the driving of medicinal ions into the tissues by the polarity action of the current, has come somewhat to the fore again in the past few years. As is well understood, the positive pole of a galvanic current repels ions with a positive charge—such as those of the heavy metals, zinc and copper—while the negative pole of the current repels ions with a negative charge such as chlorine. When medicinal solutions containing these heavy metals are applied by ionization, these metals on account of their great affinity to the tissue proteins form an insoluble precipitate with them. As a result there is devitalization of tissue—a widespread form of chemical cauterization—in proportion to the strength and length of current flow. The thin or heavy slough leads to a slow separation of detritus and formation of new granulation tissue. Such treatment has proven effective in chronic endocervicitis, in chronic middle ear disease, etc. There may be, by reflex or by direct destruction of nerve endings, some sedation of sensory nerve irritation originating in the mucosa. This may serve as a physiological basis of the explanation of a treatment recently recommended for allergic conditions by a form of zinc ionization of the nasal mucosa.

The introduction of vasodilating drugs—histamin and cholin preparations—by ionization offers a promising new form of local treatment for the rheumatoid type of chronic arthritis and for disorders of the peripheral circulations of angiospastic type.

The electro-surgical employment of the negative

pole of the galvanic current, popularly known as electrolysis, is still the standard method for safe and efficient destruction of superfluous hair.

Currents of low tension and low frequency, such as the interrupted galvanic, the faradic, the slow sinusoidal and the modulated alternating current, are at present furnished in bewildering numbers by manufacturers eager to outbid each other through the variety of modifications their low tension generators can supply. The lack of a generally accepted nomenclature adds further to the confusion of the beginner in this field. The common physiocochemical principle of the action of all of these currents is that the more or less sudden "make" or "break" brings about an ionic concentration at each pole and acts as a neuro-muscular stimulant. The resulting muscular contraction will vary according to the type of current, the technique employed and the normal or pathological state of the nerve or muscle. The faradic current brings about a tetanic contraction in a normal muscle and induces little or no response in a muscle the nerve supply of which has been damaged. This simple test is the principal means of electro-diagnosis, the classical method of differentiating between organic, central or peripheral and functional cases of paralysis.

The stimulation of muscles made possible by the various low-frequency currents provides the possibility of effective treatment of various degrees of muscular weakness and paralysis following disuse or peripheral nerve injuries; also, the restoration of function impaired through muscular weakness and the passive muscular exercise needed for improvement of circulation.

Low tension and low-frequency currents are furthermore useful in toning up the muscles of the abdominal wall and, by stimulating peristalsis reflexly, in the various forms of atonic dyspepsia, chronic constipation, visceroptosis. In peritoneal adhesions their combination with diathermy is often quite effective.

(e) *Mechanical Measures* in physical therapy are partly represented by the electro-dynamic effects of low-frequency currents just described. Their chief prototypes are massage and therapeutic exercise.

Massage acts through direct transmission of the mechanical energy of the operator, requiring only a pair of skilled hands and a trained head for its employment. Its principal physiological effect consists of aiding circulation by speeding up the venous return and increasing the movement of the body lymph. It also exerts a mechanical effect by stretching such type of fibrous tissue as the yellow elastic that can be broken down mechanically. Modern experimental evidence proves that massage is of only very slight benefit in preventing atrophy in paralyzed muscles. In muscles which are not paralyzed but have remain passive for weeks the refreshing, stroking and invigorating effect of massage helps to restore muscle strength, by reviving the active power of contraction.

The second important action of massage is its reflex influence through skin stimulation. It relaxes spasm, influences general metabolism and often aids promptly in functional run-down nervous conditions.

Massage in traumatic and in chronic inflammatory conditions of muscles and joints usually works to best advantage when properly combined with other physical measures such as preliminary deep or superficial heating and subsequent active or passive exercise or electrical muscle stimulation.

Therapeutic exercise can be classified as active, passive or resistive. General exercise is indicated in conditions due to sedentary habits, such as constipation, enteroptosis, poor posture, neurasthenia, gastro-intestinal neuroses, also in some compensated heart lesions. Local exercise is valuable for increasing the range of motion in joints and for redeveloping muscular power in traumatic conditions, in paralysis and in some inflammatory conditions of joints. Breathing exercises will help to increase chest expansion and circulatory conditions within the chest; abdominal exercises will strengthen the abdominal muscles; weak foot or flat foot exercises will greatly aid in overcoming disturbed static conditions of the feet.

The modern tendency is to substitute free and active corrective exercise for mechanical appliances and to use only such apparatus of simple construction as requires active effort by the patient. The widely advertised mechanical exercisers for the laity are objectionable because they do not encourage volitional effort by the patient; they do nothing that cannot be equally well or better accomplished by simpler apparatus or by no apparatus at all.

A valuable form of exercise has been added in recent years in the form of therapeutic pools or under-water gymnasiums. A paralyzed limb immersed

in warm water floats and can be moved about in all directions with little muscle effort. This treatment cannot restore totally paralyzed muscles but will nurse along and increase remnants of muscular power.

Summing up the physical and physiological principles of physical therapy, it is evident that its practice demands a broad knowledge of clinical diagnosis, a working conception of the effect of various physical agencies on the body in normal and in pathological conditions, and practical knowledge as to when, where, and how to apply these measures in treating disease and injury. It is not a question of applying one piece of apparatus once a certain diagnosis has been established, but to select the type of physical agent best suited to combat a given pathological or functional condition.

In order to be effective physical measures must be applied by a definite technique and on the basis of practical experience acquired under a medical teacher and not from a salesman of apparatus. They offer the advantage of giving immediate relief in many disease conditions and, applied under the immediate and continuous supervision of the physician, they add to the number of patients benefited by office treatment. It is not justifiable to attempt the use of these measures on every patient who visits the office, but they should be applied only when there are definite indications present and where acceptable results can be expected. For the same reason one should be able to employ the essential measures at the bedside.

3. Scope of Physical Therapy

Physical therapy is not a new system of recognizing and treating diseases but comprises the intelligent application of simple, age-old healing forces as well as some of the most recent advances of technical science. Physical measures, while chiefly adjuncts to other indicated medical and surgical care, have proven of definite and at times of specific value in many conditions. They can be employed for combating the principal pathological changes or for alleviating one or more of the bothersome symptoms: pain, spasm or other functional disorder. They can be directly applied to the site of the pathological changes or used for general constitutional effects. Whether a general practitioner or a specialist, every physician should be able to use some physical measures in his daily work.

(a) *Internal Medical Conditions.* In primary types of hypertension, a decrease of blood pressure may be induced by a number of thermal agents such as carbon dioxide baths, hot body baths, electric light cabinets and auto-condensation (high-frequency treatment). Low blood pressure may be raised by peripheral stimulants such as general ultra-violet irradiations, static electricity and also by cardiac diathermy. In chronic coronary insufficiency diathermic treatment of the heart may yield beneficial results when standard methods of drug administration are futile. In peripheral circulatory disturbances of the spastic type, such as in Raynaud's disease and intermittent claudication, diathermy and the introduction of vasodilating drugs by ionization are of definite value. In arteriosclerosis and thrombo-angiitis obliterans mild external heating, preferably in a thermostatically controlled cradle gives marked relief and may prevent further degenerative changes. Postural exercises and passive vascular exercises by negative pressure apparatus are also of definite value.

Among diseases of the respiratory system, pneumonia is being treated by diathermy for relief of pain and dyspnea, improvement of heart action and general sedation. Such treatment does not interfere with any other form of treatment and no untoward effects have ever been reported. In cases of delayed resolution, such treatment may turn the scales in favor of resolution. Diathermy has been advocated from the Cleveland clinic for the possible prevention of post-operative pneumonia. Cases of bronchitis in adults are always benefited by diathermy, while in bronchitis and broncho-pneumonias of children, radiant forms of heating proved successful. Pleurisy responds well to diathermic heating. In the treatment of pulmonary tuberculosis, light therapy has been extensively employed, especially in fibrous forms with no fever temperature. The amount of heat rays should be kept at minimum at all times.

Among gastro-intestinal diseases, chronic inflammatory and adhesive conditions such as chronic cholecystitis if not caused by suppurative or obstructive conditions, often respond well to a course of diathermy, while in atonic conditions of the abdominal wall and hollow viscera suitable exercises or stimulation by low-frequency currents prove helpful. In the spastic type of constipation diathermy is indicated. The value of colonic irrigations in

certain forms of colitis is well-known, but has been greatly commercialized in recent years.

In chronic arthritis and fibrositis physical treatment is indispensable; almost every case of chronic arthritis at some stage requires the application of heat in some form, usually together with massage and movement. No scheme of treatment for chronic arthritis can be considered complete unless an extensive range of physical methods of treatment under skilled direction is available. Physical therapy will assist in constitutional as well as in local treatment of this great problem of contemporary medicine. Gonorrheal arthritis responds specifically well to diathermy and in stubborn cases to fever therapy. In tuberculous arthritis, as well as in other forms of extra-pulmonary tuberculosis, light therapy together with immobilization and general hygiene constitute the standard treatment. Physical measures are likewise indispensable in the management of the extra-articular manifestations of the rheumatic syndrome, chronic inflammations of muscles, tendons, bursae and nerve sheaths. Suitable heat measures are specific for relief of spasm and pain and promote resolution. Fibrositic nodules disappear under continued heating and mechanical treatment. Constitutional treatment by physical measures—hydrotherapy, muscular exercise—for the increase of elimination through the skin, and the raising of general metabolism are as important as in chronic arthritis.

In secondary anemia, rickets, calcium deficiency, ultra-violet irradiations have proved invaluable.

(b) *Affections of the Central and Peripheral Nervous System.* A better knowledge of the underlying pathology has largely done away with the former habit of recommending electricity or other measures merely as a placebo or for disguising suggestive therapeutics. In general paresis artificial fever therapy has given promising results; in hemiplegia various physical measures are useful in giving relief for vasomotor and sensory disturbances and ameliorating paralysis. In infantile paralysis it has become generally recognized that the earlier physical measures—heat and muscle training—are employed and the most consistently they are applied the most satisfactory will be the end-result. Electric stimulation of fully paralyzed muscles, underwater exercise for those showing some active power, are indispensable adjuncts. In locomotor ataxia, multiple sclerosis, myelitis, traumatic neurosis, a variety of physical measures serves to relieve spasm, paralysis, trophic disturbances, and to uphold the morale and constitutional strength of patients. Electro-diagnosis in all of these cases is invaluable for amplifying or corroborating clinical findings and affording the means for differential diagnosis between organic and functional paralysis.

Injuries of peripheral nerves are among the most frequent indications for physical therapy. The measures indicated are: "Splinting to prevent overstretching of paralyzed or weak muscles; massage to improve the nutrition of the parts, to prevent adhesions of scars and fibrosis and to conserve the bulk of the muscles; passive movements to prevent deformity from shortening, interphalangeal fibrosis, ankylosis of joints; active exercise to conserve the nonparalyzed muscles, to stimulate circulation, to educate synergistic muscles to assume the function of paralyzed muscles; electro-therapy to conserve the vitality, prevent complete atonia and increase the contractility of paralyzed muscles, and hydrotherapy and thermotherapy to assist in nutritional conservation and to facilitate other methods of treatment" (Pollock).[4] For the relief of pain and muscle spasm in acute neuritis infra-red radiation and diathermy enable one to dispense largely with the use of sedative medication. In Bell's palsy early and intelligent use of heat and "decongestive" physical treatment enhances the chances for early and complete recovery very considerably.

(c) *Affections of Bones, Joints, Muscles and Tendons.* Physical therapy forms an essential part of the modern treatment of acute, sub-acute and chronic traumatic conditions. Its aims are to accelerate the process of repair by the increase of local circulation, by promotion of absorption, by prevention of adhesions; also to relieve pain, to relax muscle spasm and to restore function. External or deep heating followed by massage, electric stimulation or active exercise are the backbones of treatment judiciously applied for contusions, strains, sprains, traumatic arthritis, fibrous ankylosis of joints and in the early treatment of fractures and dislocations. Industrial concerns and insurance companies were quick to see the advantages of correct physical measures in traumatic cases. Industrial clinics organized entirely on a commercial basis have, unfortunately, overplayed physical therapy as a source of revenue, and a better control of this abuse by organized medicine is imperative. Myositis, teno-

synovitis, bursitis and painful shoulder conditions, coccygodynia, cannot be treated effectively these days without some form of physical therapy.

(d) *Gynecological Conditions.* In local infections of the female genital tract, gonorrheal and post-partum infections, endocervicitis and pelvic inflammations, thermal measures, notably diathermy, serve to relieve pain, overcome the infection and to speed up resorption of the products of inflammation. Negative galvanism serves to soften and gradually dilate a cervix in congenital stenosis; low-tension wave currents are useful in developing the musculature of an infantile uterus and in toning-up and redeveloping relaxed pelvic muscles after childbirth and after plastic operations. The ready accessibility of the female genital tract lends itself to the comparatively easy yet thorough destruction of surface growths and to the destruction of diseased epithelial lining in the cervix and uterus by electro-surgical methods. Similar considerations prevail in the treatment of chronic inflammatory conditions and new growths in the *male genito-urinary* tract: chronic prostatitis, seminal vesiculitis, epididymitis respond well to diathermy while in the treatment of surgical conditions of the prostate and bladder electro-surgery has enabled surgeons to make gratifying advances.

(e) The treatment of *dermatological conditions* has been practically revolutionized in the last two decades by physical therapeutic agents, notably roentgen rays and electro-surgery. Ultra-violet radiation, contrary to early enthusiastic reports, has only a limited field in skin tuberculosis, alopecia areata, seborrhea capitis, abscesses and boils, burns, ulcers and wounds, and, according to most recent reports, in erysipelas. Electro-desiccation is used to great advantage when lesions are superficial and good cosmetic results are essential.

(f) In the field of *oto-rhino-laryngology* and *ophthalmology* there is an increasing use of physical therapy in conjunction with accepted forms of medical and surgical treatment. Relief of pain by luminous heat or infra-red in acute inflammatory processes is not equalled by any other method of treatment; zinc ionization is of specific value in chronic suppurative otitis media in the absence of bone necrosis, granulation tissue formation or cholesteatoma. For the bloodless and efficient removal of hypertrophied or diseased tissue or accessible new growths, electro-surgery offers a method of choice to the trained nose and throat specialist, but not to the general practitioner who foolishly embarks upon it without sufficient diagnostic and surgical grounding. Corneal ulcer responds favorably to local ultra-violet irradiation by skilled hands, while in tuberculous irrido-cyclitis general ultra-violet irradiation often yields dramatic results. Warts, moles, cysts about the lids can be satisfactorily removed by fine electro-desiccation.

The outline of pathological and functional conditions in which physical measures are indicated is by no means complete. It can be stated without exaggeration that physical therapy opens up many new vistas in medicine and surgery and promises results in many conditions in which treatment by medication and surgery alone is not quite satisfactory. It is evident that physical measures are best practiced by the broadly trained physician who knows their proper indications as well as their limitations and dangers. There is need for specialists in physical therapy but at the same time it behooves every practicing physician to be familiar with the principal physical measures and their scope of application so as to be ready to give his patients at all times the benefit of the more simple measures.

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VITAMINS AND THEIR PLACE IN MEDICINE.

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There was a time when vitamins were considered as a fad; however, even with our present meagre knowledge, the writer believes that it behooves even the most conservative of us to use what knowledge has been found out about vitamins. No doubt in the next fifty years our knowledge of this great subject will be still incomplete, but we will probably know much more than we do at present.

In the preparation of this paper, the writer is indebted to the following references: Bulletin of the New York Academy of Medicine, August, 1934, and The Vitamins, which is made up largely of a reprint of the *A. M. A. Journal,* April to October, 1932, issues. For those who are sufficiently interested and more ambitious, I would refer them to the exhaustive list of references at the end of this article.

VITAMIN A

Vitamin A is widely distributed in nature in products of both animal and plant origin. In all these instances the potent constituent has been found to be associated with fats or fat-like substances. It does not necessarily follow that vitamin A is a fat. But its association with fats in nature is presumably due to comparable solubilities, as is the case with higher alcohols, sterols and certain pigments in nature.

In young animals, the interruption of growth is one of the earliest signs of lack of vitamin A. They become emaciated, grow lean, waste away in flesh. Incoordinate movements are present, xerophthalmia then follows, with sometimes copious purulent secretion from the eyes. The cornea is inflamed and the eyelids swollen, there is abscess formation of lymph glands of the neck, draining later as sinuses, and they will not heal until vitamin A is supplied. There may be hematuria and diarrhea and gastric disturbances in the later stages. Calculi are often found in the urinary tract.

The female reproductive system is injured and fertilization and implantation often fail. Lack of vitamin A also leads to sterility in the male.

Some good sources of vitamin A are as follows: Green asparagus, whole wheat products, raw green cabbage, cheese, yellow corn, lettuce, beef liver, orange juice, peaches, peas, pumpkins, tomatoes and carrots.

Excellent sources of vitamin A are as follows: butter, raw carrots, cod-liver oil, cream, halibut liver oil, eggs, milk, spinach and water cress.

Vitamin A is the anti-infective vitamin, and promotes growth. It is stored in the liver, and this organ, no doubt, has to do with the regulation of the concentration throughout other parts of the body.

Lack of vitamin A causes diseases of the eyes, such as night-blindness, pigmentation of the cornea, styes, decrease in tear fluid, edema and puffiness of the eyelids, throat and lung troubles. Lack of vitamin A, according to McCarrison, shows a high incidence of infection of the nose and accessory sinuses, otitis media, lungs and upper respiratory passages.

A high incidence of urinary calculi and deposits of calcium in experimental animals is found. This has not as yet been proved in the human.

The administration of cod-liver oil causes a rise of from 1 to 30 per cent in the reticulocyte count.

The treatment of the vitamin A deficiency diseases, of course, is a diet containing adequate vitamin A, such as butter, milk, cod-liver oil, and green vegetables containing green and yellow pigments. Where the gastro-intestinal symptoms interfere with the administration of food, subcutaneous injections of cod-liver oil (boiled to sterilize), one-half to one c.c. daily for four to eight days, is sometimes helpful. Bloch treated cases of night-blindness successfully in this manner.

VITAMIN B (1)

Vitamin B or B (1) is known as the antineuritic thermolabile component of what was originally known as vitamin B. After years of considerable experimentation, it was found that the original vitamin B was made up of two distinct vitamins. We in America designated these vitamins as vitamin B and vitamin G. Our English cousins designated the same vitamins as vitamin B (1) and vitamin B (2). Vitamin B (2) or G is the antipellagra vitamin.

Lack of vitamin B causes anorexia, hypomotility of the gastro-intestinal tract. Vitamin B aids carbohydrate metabolism. The lack of vitamin B causes nerve degeneration, atrophy of the thymus, and voluntary muscles. Lack of this vitamin also causes enlargement of the heart and suprarenals, atrophy of the mucous and muscular layers of the gastro-intestinal tract, enteritis, and degeneration of the mesenteric plexus of Auerbach.

The distribution of vitamin B is as follows: It is found in oats, corn, wheat, wheat embryo, outer layers of rice, rice polishings, and red kidney beans. Yeast is also an excellent source. Vitamin B is soluble in water and alcohol, and is destroyed at high temperatures.

VITAMIN B 2 (G)

As stated before, this vitamin is the antipellagra factor of the old vitamin B. This vitamin is used extensively in the prevention and cure of pellagra. This substance, as opposed to vitamin B (1), is thermostabile, but is unstable when heated in the presence of an alkali.

The distribution of vitamin B 2 (G) is as follows: dried liver, dried yeast, dried steak, milk, dried egg yolk, wheat germ, wheat bran, whole wheat, dried peas, and rice polishings. The black tongue, so-called, found in animals, corresponds to our human pellagra, and has been treated successfully by the administration of vitamin B 2 (G) fed to these animals.

VITAMIN C

This vitamin is known as the antiscorbutic vitamin. Lack of this vitamin will also lower the vitality of patients to a remarkable degree. It was found, in a group of children who were scorbutics, that they had nasal diphtheria, although they were Schick negative. Lack of vitamin C tends to a susceptibility to boils, nasal diphtheria and grippe. Infantile scurvy shows a rapid pulse and respiration, paresthesia, patchy anesthesia on one or both legs, and the knee jerks are exaggerated or absent.

Foods which have vitamin C are good sources of the vitamin when the foods are dried under anaerobic conditions. The presence of oxygen during the drying process destroys vitamin C.

This was demonstrated during the World War, when drying establishments were set up all over the United States, but were later abandoned. Vitamin C is found in oranges, lemons, limes, pineapples, white cabbage, tomatoes and potatoes.

VITAMIN D

Vitamin D is known as the antirachitic vitamin. Through experimentation, foods or other material which are activated by ultra-violet radiation were found not to be a fat, but a substance associated with fats, an obscure sterol, called ergosterol. Ergosterol is found in plants and in the skins of animals. The probable explanation of the antirachitic action of ultra-violet radiation is that the radiation forms vitamin D from the ergosterol in the skin. Vitamin D probably increases the store of calcium and phosphorous and its metabolism in the body.

Vitamin D is very stable. One investigator tested two samples of cod-liver oil which had been kept in a cool place, protected from light, for twenty-six years. He found that this twenty-six-year-old oil had a vitamin content apparently identical with that of fresh Norwegian cod-liver oil.

An interesting feature of vitamin D, which has not been noted of the other vitamins, is that when given in from 10,000 to 100,000 times, the protective dose, it causes a rapid loss of weight, loss of appetite, severe emaciation and decrease in vigor. Diarrhea often develops in these cases. After death, enormous deposits of calcium were found in the walls of the blood vessels, and of the vital organs. This was evidence that calcification had been stimulated to the point at which the mineral was deposited in any and all tissues which would receive it, whether or not it was needed or even useful.

The distribution of vitamin D: Cod-liver oil is the chief natural source. However, other fish oils have been found to have contained this vitamin. The halibut liver oil has proved to be as rich in vitamin D as the cod-liver oil. The oils containing vitamin D should be kept away from the light and air, or it will become rancid, and the vitamin content, especially vitamin A, is diminished. The puffer fish liver oil is fifteen times as potent as the average cod-liver oil. Certain samples of burbot liver oil proved to be eight times as potent as cod-liver oil. The body oils of fish, such as the tuna fish, sardine, and Newfoundland herring, are equal in potency to cod-liver oil. Shrimp and oysters also have appreciable amounts of vitamin D. In the egg yolk vitamin D is found to be very stable. Milk heated or evaporated loses some of the vitamin D. It is believed that lack of this vitamin also causes dental caries.

VITAMIN E

Laboratory animals fed on apparently well-balanced diets with all of the vitamins mentioned before, grew to adult life, but were found to be sterile. In the male, the seminiferous ephithelial cells degenerate completely. In the female, no degeneration of ova or ovarian tissues can be demonstrated, but there is a marked effect upon the developing embryo. After considerable investigation it was found that the apparently normal body, in order to reproduce, had to have still another vitamin. Substances were found in which this vitamin was present, and, when fed to the laboratory animals from infancy to the adult stage, would reproduce their kind successfully. A rather discouraging fact is brought out here, and that is that diets containing vitamin E do not always cure sterility in the male. Vitamin A given to these cases seemed to give higher percentage of cures or restorations. Vitamin E is probably stored in the muscles and fat of the body. Lack of vitamin E causes nervous impairment and paralyses. It also causes atrophy and underweight.

Distribution of vitamin E: This vitamin is found in wheat, corn, lettuce, spinach, alfalfa and water cress. In the cereals it occurs exclusively in the embryo and not in the endosperm. Wheat germ oil is the highest known source. Most vegetable oils contain it in varying quantities. Vitamin E is very stable, even at high temperatures, if in a dry condition. It has been found that it is better to feed the mothers of sucklings the vitamin E, and this is secreted by the mammary glands and so passed on to the young.

SUMMARY

To summarize briefly, let us take up the vitamins in the following manner:

Vitamin A: Found in milk (mother's and cow's), butter, cream, eggs, orange juice, green vegetables, carrots, pumpkins, yellow squash, yams, tomatoes, whole wheat products, liver, cod-liver oil, and halibut liver oil.

Not usually affected by moderate heat, but is sometimes impaired. Milk and green vegetables are best taken raw.

Vitamin A may affect the growth, stamina, nervous stability, resistance to infectious diseases, xerophthalmia, keratinization of the skin, and other epithelial structures, disturbances of the alimentary tract, sclerotic changes in the nervous system, impairment of vision and probable sterility.

The causes of gastric and duodenal ulcers are rather obscure at times, and so far as we know are not caused by a lack of vitamin A. However, some cases of ulcers have been very successfully treated by giving the patient a diet rich in vitamin A.

Vitamin B B (1): This vitamin is found in the outer coating of rice, whole wheat, and other whole grain products, peas, lentils, lettuce and raw cabbage, spinach, tomatoes, liver, eggs, and yeast. This vitamin is usually not affected by moderate heat. Green leaves are best taken raw. This vitamin may affect beriberi, polyneuritis and other diseases of the nerves, growth, sterility, alimentary disturbances (especially the appetite and digestion), degenerative changes in the heart.

The treatment of gastric and duodenal ulcers have been apparently more successful when more vitamin B was added to the diet.

Vitamin C: Found in lemons, oranges, limes, pineapples, berries, tomatoes, carrots, lettuce, cabbage, spinach, potatoes, milk and rare meats. Cooking may impair this vitamin. Fruit and green leaves are best eaten raw. Vitamin C may affect scurvy, the teeth and gums, mental and physical efficiency and hemorrhagic tendencies. Gastric and duodenal ulcers were found to improve when this vitamin was included in the diet.

Vitamin D: This vitamin is found in cod-liver oil, halibut liver oil, eggs and cream. It is affected by the sunlight and artificial ultra-violet rays. Moderate heat does not affect. This vitamin may affect the calcium and phosphorus metabolism of the body, rickets, tetany, osteomalacia, malformation and deformities of the bone, and onychia.

Vitamin E: This vitamin is found in lettuce, cabbage, water cress, whole cereals, vegetable oils, yeast, lean meat and animal fats. It is not affected by moderate heat. However, the green leaves are best taken raw. This vitamin may effect fertility, nervous stability and growth.

Vitamin G B (2): This is found in yeast, liver and liver extract, rare and lean meat, milk, eggs, carrots, beans, peas, tomatoes and whole wheat products. This vitamin is not affected by moderate heat. Vitamin G affects pellagra, various cutaneous disorders, gastro-intestinal, brain and cord conditions, and onychia.

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PRIMARY CHONDROMA OF THE LUNG—CASE REPORT.

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Chondromas of the respiratory tract occur in the trachea, bronchi and lungs, arising from misplaced islands of cartilage in these structures. Vinboro has described multiple chondromas of the lung, located at the root, in the parenchyma and on the pleura. While generally purely cartilaginous, they may undergo calcification or ossification. Ewing[1] states: "In the lung rare tumors occur as multilobed growths of hyaline cartilage, subpleural or deep within the lobe, and their association with connective and fat tissue points to an origin for some of them from a complex mass of tissue."

Interest in primary chondromata was first manifested about the middle of the nineteenth century. This interest waned as the feeling gradually grew that these lesions were accidently discovered at postmortems and had no clinical value. It is evident, however, that death in several of the reported cases has been due to the tumor.

A review of the literature reveals forty-one primary chondromas, ten of which are reported in English. The subject is usually dismissed with the statement that such tumors are rare, but the fact that one-half of these cases have been reported since 1900 would tend to prove that they are much more common than generally believed.

CROSS CHARACTERISTICS

Pulmonary chondromas are round or oval, and vary in size from a walnut to an orange. Their consistency is firm and often rock-like. Two characteristics which are important from an X-ray standpoint are their lobulated structure, and the tendency to undergo calcification or osseous transformation. Chondromas of the lung show the same characteristics as those that arise elsewhere.

The tumor is usually surrounded by a firm connective tissue capsule, which shows no derivation from the surrounding lung tissue. The connective tissue septas separating the cartilaginous units are quite vascular and often show a myxomatous degeneration. There is surprisingly also a relative

abundance of adipose tissue between and extending into the cartilage islands.

MICROSCOPIC CHARACTERISTICS

Hyaline cartilage is the most prominent element, arranged in islands with connecting bridges. Calcification is generally found in variable areas with degeneration and necrosis in others. Calcium granules may be scattered throughout, and areas of ossification may be seen.

Peculiar epithelial-lined spaces may be seen in the interlobular clefts, lined by cubical epithelium. It is at once evident that the components of these tumors constitute a bronchial complex representing all the histological elements of mature bronchi.

ANATOMICAL LOCATION

The location is variable. The usual location is in close proximity to the pleura. Pedunculated tumors in the pleural cavity with their pedicle attached to the pleura have been described. Other locations may be in close association with the bronchial cartilages, between the pulmonary lobes, or near the lung root. In no report does the tumor appear to originate in the mediastinum and extend secondarily into the lung parenchyma. The variability in the location of these tumors, as well as their usual peripheral location and their lack of contact with the bronchi, offer interesting material for a discussion as to their probable origin.

HISTOGENESIS

These tumors cannot be classed as simple ecchondrosis. Their complexity and failure of intimate association with the bronchi argue against any such possibility. Some writers have intimated that they may have originated from the bronchial cartilages and that they secondarily became separated. Their frequent pleural and sub-pleural situation tends to exclude this theory.

Hart[3] is of the opinion that the location of many of these tumors in situations where no legitimate cartilage anlage should be present, and the very complexity of their components gives conclusive evidence of their true neoplastic character. Because of the admixture of connective tissue derivatives and epithelial structures, he classed them with teratomas. He called his tumor adeno-fibro-lipo-chondroma myxomatosum. Chiari[4] called them lipo-chondro-adenomas. McGlumphy called them adeno-chondroma.

Chiari assumed that these tumors represented hyperplastic growths from the bronchi as the result of chronic inflammation.

Feller points out that the components of these tumors are all structural elements of lung tissue, and he compares them structurally to adeno-fibromas of the breast.

It is reasonable to explain the genesis as the result of perverse development of bronchial anlage. They must then have their origin early in fetal development.

The pulmonary chondromata probably have little in common genetically with the more complex dermoid cysts, and trigeminal teratomas, which are found with relative frequency in the mediastinum and rarely in the lungs. Cartilage and bone may be found also in such structures.

In summary, pulmonary chondromas probably represent lesions having origin in aberrant bronchial anlage, as all the structures which compose these mixed tumors are normal components of the bronchi.

DIAGNOSIS

An accurate X-ray interpretation is the best method of diagnosis in life. Physical signs have been of no avail. The sharply circumscribed character of pulmonary chondromas serves to distinguish them from inflammatory lesions. The sharply-defined periphery of chondromata is invariably surrounded by healthy air-containing lung parenchyma. The absence of irregular peripheral inflammatory infiltrations serves to distinguish this condition from old tuberculosis lesions with calcification. This tumor must be distinguished from echinococcus cyst which occurs more frequently and from obstruction of a bronchus with emphysema. The chief differential problem exists between chondromas and echinococcus cysts. The differential points are:

1. Roentgenographically, the chondromas at their periphery, although sharply circumscribed, are nodular; the echinococcus cysts are smooth.

2. In chondromas peripheral inflammation is unknown.

3. In chondromas the calcification or ossification is patchy and irregular in its distribution.

4. If the nodular periphery is present with irregularity of radiopacity due to patchy calcification or ossification, in the clinical absence of taenia

echinococcus infestation, the diagnosis is probably chondroma.

5. Chondromas have slight clinical importance.

CASE REPORT

J. A. M., No. 55483, white male, age 54, occupation, painter; was admitted to the hospital July 25, 1934, for treatment of suspected carcinoma of the stomach.

Chief Complaint: Pain in the abdomen with weakness and vomiting.

Family History: No history of malignancy.

Past History: Malaria in 1898; appendectomy 1924.

Present Illness: Daily dull epigastric pain during the past fifteen years, not related to meals but relieved by food, occasionally associated with vomiting. There has been no history of blood in the vomitus or stools. Habitual constipation has been the rule. Three weeks before admission, sudden severe and continuous vomiting for four days, becoming less in severity and frequency.

Physical Examination: The patient was a poorly developed and under-nourished male who showed a marked pallor of the skin and mucous membranes. He appeared seriously ill. On examination of the abdomen there was tenderness in the mid-line with bilateral rigidity. No masses were palpable.

On examination of the chest, mobility was fair and equal. Resonance, fremitus and auscultation were normal.

Temperature range 98 to 101, pulse 70 to 130, respiration 20 to 25, blood pressure 100/56.

Laboratory Findings: Urinalysis — reaction; acid; specific gravity, 1.010; color, straw; albumin, negative; sugar, negative; white blood cells, few; red blood cells, none; casts, none; epithelia, few.

Wassermann—negative; Kahn—negative.

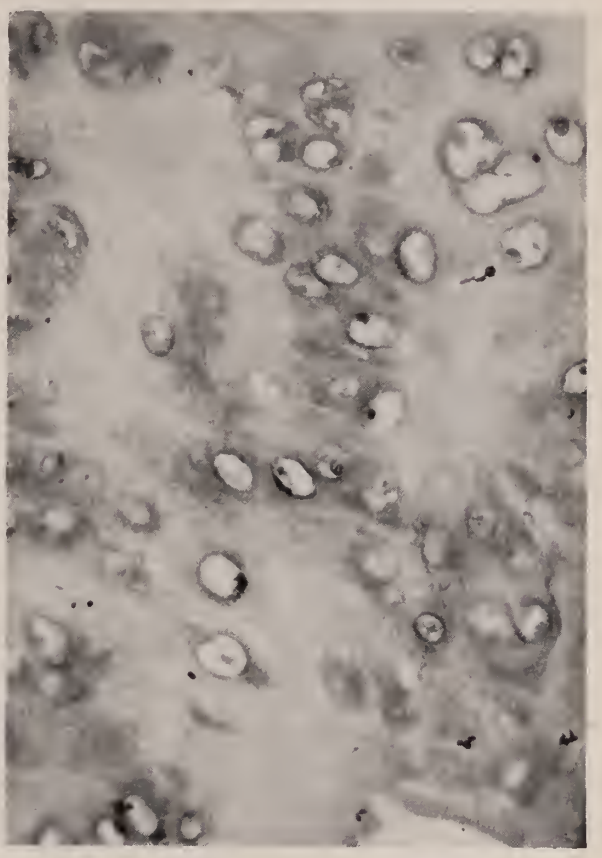
Examination of blood—red corpuscles, 1,500,000; white corpuscles, 6,200.

Differential Count—Polymorphonuclear leucocytes, 69 per cent; small mononuclear leucocytes, 27 per cent; large mononuclear leucocytes, 4 per cent; polychromatophilia, few; anisocytosis, marked; poikilocytosis, marked; nucleated reds, few; hemoglobin, 28 per cent.

Clinical Diagnosis: Ulcer of the duodenum, with ruptured vessel in the scar.

Treatment: Symptomatic.

Prognosis: Patient died nineteen days after admission.



Section from mass in right lung showing hyaline cartilage with ossification.

POSTMORTEM EXAMINATION

Peritoneal Sac: The peritoneum was smooth. An old indurated area in the duodenum was firmly adherent to the liver. In the duodenum just below the pylorus on the posterior wall an ulcer about 1.5 cm. was found, with marked induration of the edges, which was perforated and firmly adherent to the liver. Localized peritonitis was noted. On examination of the ulcer crater which was made up of dense scar, there was a small vessel, the lumen of which was open, the probable site of the prolonged hemorrhage. The stomach contained much partly digested blood. The colon in its transverse and descending portions revealed extensive multiple diverticulae, each of which contained fecal material which could be expelled only with difficulty. There was no evidence of any inflammatory lesion of the gut other than this.

The liver weighed 1,800 grams. It was pale and

the capsule was smooth. On the under surface just to the left of the gall-bladder, a perforated gastric ulcer was adherent. There were also a number of old adhesions in the region showing evidence of an old localized peritonitis.

Lungs: Right lung weighed 400 grams. It was somewhat edematous in the lower lobe; also congested. There was a moderate amount of pneumoconiosis. On section a hard mass of cartilage and bone measuring 1 cm. in diameter was found in the anterior portion of the right lower lobe. On section it was seen to consist of bone and cartilage.

The left lung weighed 450 grams. It had the same gross characteristics as the right except the osteo-cartilaginous mass was not found.

The mediastinal glands were negative.

Anatomical Diagnosis:

1. Ulcer, duodenal, healed, with ruptured vessel in scar.
2. Old perforated ulcer, duodenal, with adhesions to liver.
3. Diverticulitis colon.
4. Osteochondroma right lung.
5. Secondary anemia, severe.
6. Surgical absence appendix.

Comment: Due to the critical condition of the patient, gastrointestinal X-rays were not made, nor was an exploratory laparotomy attempted. There was no history or findings to suggest the *osteochondroma,* and consequently no X-ray of the chest was taken either antemortem or postmortem. The tumor was discovered quite accidentally at the necropsy table.

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WAR NEUROSES AND LACK OF EVIDENCE TO ESTABLISH IT.

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Cannon has shown that "in states of emotion there are profound alterations in the activities of the body, cessation of activities that build up reserve energy, such as digestion, with mobilization of materials for transformation into vigorous action, increase of glucose in the blood, exaggerated adrenal activity, alterations in blood pressure and distribution of the blood. . . .Prolonged emotion with all the metabolic changes it implies may cause toxic states."

"Emotion is a state of the body as well as the mind . . . evidenced by changed metabolism, organic function, blood pressure, etc., and is an entirely natural reaction to stimulations of certain kinds, though subject to conditionings through brain pathways, and if the conditions be such as to cause prolonged emotion, it is quite possible that actual exhaustion and intoxication of the body may result."

Weschler notes that "Emotion which eludes definition may work havoc with mental and physical behavior." . . . "There are entities that cannot be defined therapeutically, especially with regard to psychoneurosis."

"With increasing experience and accumulation of knowledge, it is becoming more and more difficult to deal adequately and scientifically with the subject of psychoneurosis.

"Only scientific language as that which speaks in terms of structure and function cannot explain all. . . . Perhaps in the field of biochemistry lies the solution. . . . The central nervous system is bound up with the vegetative in organic control. . . . Psychoanlysis is only one method of diagnosis . . . and there is great need of scientific reestimation of the whole subject.

"Neurology and psychiatry are intimately bound up with general practice, and statistical methods are needed in large series of cases."

Being a World War veteran I have been greatly interested in a group of veterans whom I have ob-

served for many years. This group apparently belongs to the psychoneurotic class and have been diagnosed as such by the medical examiners of the Veterans' Administration.

There are some features that interest me in these men. One is that they cannot establish connection with army service by evidence produced, but were healthy men before they entered military service, and during their enlistment, except for temporary unfitness caused by disease or injury. Such soldiers were discharged as sound. In studying and observing their condition, I find, however, that they cannot, nor have they ever been able from the date of their discharge to stand a long strain of work, as this brings out numerous and varied complaints that are real in their disabling qualities and some times in apparent forms such as giant urticaria.

Office examinations in these cases reveal little, but the strain of work brings on various abnormal manifestations; so I see no way that a diagnosis, in regard to therapy and relief, can be made in such cases, except by a long period of observation under exercise and functional tests.

These men, probably by heredity not constitutionally fitted to stand the strains of modern war, are in a pathetic condition, not being able to make a living for themselves and their dependents. Evidently such symptoms as insomnia, dizziness, inertia, indigestion, cramps, analgesia, paresthesia, irritability, etc., were experienced by them after their discharge but they tried to go on with work and efforts to make a living, until finally, growing worse after a period of years, they consulted a doctor, who usually made no record of their troubles even if a diagnosis were made. Eventually upon applying to the Veterans' Examining Board for an examination, no conclusive evidence prior to 1925 could be established to connect their troubles with army service so that they might claim a pension.

As many of these veterans are illiterate and desperately poor, I believe our Government should go more thoroughly into their cases and, if necessary, institute a new law to give them relief, as there is nothing in their histories as far as I can find that could have brought on their troubles, but hardships endured in army life. In a long practice I have never known another group of young men so afflicted in civil life, and it is evident that if these veterans had not entered the war they would have been sound and healthy today.

These ex-service men can give evidence from observers that, since their discharge, they have not been able to work for a living and have been more or less dependent.

The U. S. Government took these soldiers by draft into service, exposed them to danger and hardships, but, when discharged, they had no adequate examination to determine their trouble; for the best authorities state that it takes time and long patient observation to determine such troubles.

They underwent years of struggling to overcome an unknown condition before such veterans began to realize that they were helpless to make a living for themselves and their dependents, and when, finally growing worse from strain of work and worry, they appealed to the Veterans' Board for an examination, time had passed for them to secure a pension. Their ignorance in describing obscure nervous symptoms, the paucity of reliable dates connected with symptoms, the lack of records kept by the doctors who had examined them, left these ex-service men without help in poverty and misery, when they had given more than life for their country in receiving their affliction. I do not know how many such conditions exist throughout our country, but there must be some thousands, for, if they are in the same proportion even in Virginia as in Nelson county, there should be over five hundred in this State.

Upon a long observation of these men I can state that, without fear of contradiction, were the Government to undertake to prove that army service did not bring about this condition of invalidism, it could not do it. I have no patience with a strong healthy veteran who claims help from the Government; but those that were injured in service should be helped as far as possible and not allowed to drag out their lives in misery, when a small regular compensation could at least save them and their dependents from abject poverty.

The Government should not take the attitude of trying to shunt aside such veterans and getting rid of the responsibility of helping these unfortunates, but should use every means to arrive at the truth in these cases and help where help is justly due.

TREATMENT OF BURNS WITH GENTIAN VIOLET.*

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The rationale of the treatment of any burned area is influenced necessarily by many factors. The pathologic processes causing the symptoms and sometimes the death of severely burned patients may be considered under the following divisions: (1) shock, (2) changes in the blood, (3) infection, and (4) complications. In this paper I intend to take up more thoroughly the third division—infection—since the treatment of this condition at the present time is much more unsettled.

Treatment should aim at overcoming the above pathologic processes caused by the burn. Shock must be combated early, blood changes corrected, and infection prevented. The first feature to be considered is the primary shock which occurs almost immediately. This seems to differ in no way from any traumatic or surgical shock, and certainly occurs before any fluid loss in the form of edema of the burned area is manifested. The answer to primary shock is still a debatable question and no attempt will be made to solve it at this time. It is sufficient to say that if it is combated early and adequately, with heat, rest, fluids, and stimulants, it can be overcome in the majority of cases. The blood usually shows a high hemoglobin, low chlorides and a leucocytosis. This can be controlled satisfactorily by early and adequate amounts of fluids administered, as water by mouth, saline per rectum or subcutaneously, and 5 per cent dextrose solution intravenously. Sometimes the administration of fluids is a difficult matter. In severely burned patients, especially children, I have found that fluids could be given very easily with a duodenal tube kept in position continuously.

There has been a failure to grasp the importance of bacterial invasion as the principal cause of the symptoms formerly attributed to the toxins produced in the burned skin. Recent bacteriological studies show that in 100 per cent of the severely burned patients, and in a large majority of the minor burns, there could be grown from repeated cultures the beta-hemolytic or the gamma streptococcus. The concentration of these organisms increased with the obvious signs of sepsis and the beginning of the toxicity of the patient until, after forty-eight to fifty-six hours, pure cultures of the streptococcus could be obtained. Coincidentally, the characteristic bad effects of the burn were shown by the patient. Additional evidence has been obtained by taking blood cultures from patients after the temperature has started to swing in the picket fence curve. These cultures were positive for the invading streptococcus. Another bit of evidence in favor of the theory is that, in fatal cases, the streptococcus was found in the heart-blood and in the lungs in the instances of terminal pneumonias.

If it is true that the streptococci are the microorganisms that are chifly concerned in bringing about the toxic state, then, certainly, agents that are more antiseptic than the drugs in general use at the present time must be employed. It has been shown that the analine dye, gentian violet, is highly bactericidal against the gram-positive organisms.

Gentian violet is a coal-tar derivative and is slightly alkaline in its reaction. It is quite cheap, and comes either in crystalline or tablet form. The tablets should not be used, as the cohesive substance in them is quite irritating to the burned patient. It is readily soluble, and an aqueous solution of 1 per cent can be made with great ease. The solution is sterile at all times. It can be seen that it has two valuable characteristics which answer the problems offered by a burned patient: it is a specific antiseptic for the invading organism and, because of its pH reaction, together with the contained methyl radical, it reacts with the burned flesh to form a thin, light eschar, tough, but flexible. This eschar when situated in the folds of the body will bend but not crack. The burn is thus sterilized and protected from further infection by an almost ideal protective eschar. The dye also produces practically instanteous analgesia.

Technique of the Gentian-Violet Treatment.—When a patient is admitted with a fresh burn, unless it is covered with oils or grease, there is no need to do any preliminary cleaning, the dye in 1 to 5

*Read before the Southwestern Virginia Medical Society, at Christiansburg, Va., March 22, 1935.

per cent solution being sprayed on the burned area immediately. The usual procedures to combat any existing shock are carried out. The patient is then sent to the ward and placed so that the burned area is uppermost. The burn is not covered with a dressing. The bed clothes are supported by a cradle and in the cradle a light bulb is placed. This light and the heat it generates is in no way to be confused with the dry heat treatment of burns. It is merely there to keep the patient warm. The temperature under the cradle is maintained between 84 and 88 degrees F., this being the temperature found to be the most comfortable for the patient.

For the first few hours, gentian violet is sprayed on the burned area every two hours. A light eschar is formed very rapidly, the wet oozing areas becoming dry and tough. The burn is thereby sealed sterilely under an impermeable cover. Further infection is thus kept out, and the loss of fluids through the serous ooze eliminated. Likewise, by the time the preliminary sedative has worn off pain has ceased.

After the eschar has formed, the patient is sprayed every four to six hours during the day. Any blebs that have formed are opened and the unstained portions then presenting are sprayed. This treatment continues until healing is complete.

One remarkable thing that has been noticed is that in practically none of the burns, unless actual charring has taken place, is all the epithelium destroyed and that there exist many small islands throughout the lesion which will live and spread rapidly if not destroyed by sepsis. This spread takes place unhindered under the eschar which acts as a scaffolding and which will curl up on its periphery as the healing progresses. These curls can be trimmed away to prevent the forming of any pockets for infection. If the burn is so deep and so extensive that skin grafting is going to be necessary, the eschar is allowed to remain on for about three weeks, after which time it can be softened and removed by warm compresses of sterile salt solution. By that time the granuations have built up enough to graft, and, being sterile, they accept new skin readily.

In treating less extensive burns, I perfer to incorporate the dye into a jelly-like base. This can be accomplished by adding 30 gms. of tragacanth to 1,000 c.c. of a 1 to 5 per cent aqeuous solution of gentian violet. A thick layer of this jelly is applied to the burned area, and the further treatment carried out as explained above.

CLINICAL ASPECTS OF DESTRUCTION OF THE ADRENAL GLANDS.*

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That adrenal insufficiency is perhaps a rather common disturbance is indicated by the fact that only several years after Addison's report of one of the types of cases, Samuel Wilks, pathologist at Guy's Hospital and colleague of Addison, was able to report upon a very critically selected series of twenty-five cases, with autopsy reports. One can sympathize with Wilks for eliminating certain of the cases which Addison, undoubtedly with both foresight and insight, included in his series, because, although the new disease was perfectly obvious to Addison's colleagues at the Hospital, there was marked tardiness in its acceptance by the remainder of the medical profession.

Addison characterized the disease, now known by his name, chiefly by the "general languor and debility * * * and a peculiar color of the skin occurring in connection with a diseased condition of the suprarenal capsules." In addition he noted anorexia, feeble pulse, wasting of the body, abdominal pain in the region of the stomach, occasional vomiting and more rarely evidences of disturbed cerebral circulation.

Wilks, for his part, elaborated upon the symp-

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toms recorded by Addison, chiefly with respect to those present in the revised series of cases, but made little change in the presentation of the essential features. One of the most important points insisted upon by Wilks is that emaciation is not one of the symptoms of adrenal disease; the remarkable feature of Addison's disease is that "feebleness should exist without any apparent disease to account for it." Remissions occur in some cases, so that the patient is able to resume work, only later to experience a very rapidly downhill course ending in death. Discoloration of the skin, "although a striking feature of the complaint, was not the main one insisted upon by Addison," it only reached this status because it was a very tangible feature, prominently portrayed in Addison's monograph. When pigmentation occurred, Wilks found "a layer of pigment in the rete mucosum, just as in the dark races of mankind."

Pain in the back, when not explainable by other and obvious lesions, was believed due to involvement of the nerves of the adrenal glands in the destructive process. Whether or not such a disturbance was related to the splanchnic nerves was not clear to either Wilks or Addison, but it was concluded, surprisingly enough, by Wilks that the adrenal glands were not essential to life. As regards duration of the disease, "Doctor Addison," says Wilks, "was impressed with the belief that the constitutional symptoms existed long before the discoloration of the skin, and he was led to the fact of certain patient's dying without discoloration, in whom the changes in the morbid material of the capsules had not reached that final degree which is sometimes met with."

With the passing of years very little change has occurred until recently, with regard to the attitude of either pathologists or clinicians toward disturbances resulting from adrenal insufficiency. Formerly, for the patient's symptoms to be acceptably explained by insufficient function of the adrenal glands, it was necessary that there be practically complete destruction of these organs at autopsy. With the complex inter-relationship between the various glands of internal secretion this conservative attitude was, however, undoubtedly of the utmost importance. The dangers of including incorrectly diagnosed cases in the literature is evident enough.

During the past ten years there has been considerable progress in regard to the symptoms and general metabolic alterations in cases of involvement of the individual glands of internal secretion. A significant portion of the work which has been of assistance in deciding upon the changes which accompany adrenal gland disturbances has been in the experimental field.

Hartman, for instance, has found, in adrenalectomized cats maintained on insufficient doses of cortical hormone, that there was gradual loss of weight, the animals fatigued more readily, there was decreased resistance to cold, and that discoloration of body fat was present at autopsy. Massey found a decrease of metabolism after adrenalectomy in the rat; the lowered metabolism could be decreased still further by removal of the thyroid together with the adrenal glands. Wyman and Walker noted a fall in blood sugar of approximately 30 mgm. per cent following double adrenalectomy in rats, while upon occasion the blood sugar value fell to 30 mgm. per cent at the time of terminal convulsive seizures. Geiling and Britton found a fourfold susceptibility of rats to insulin after removal of sufficient tissue to produce a chronic adrenal insufficiency. As regards the formed elements of the blood, Zwerman found a leucopenia and lymphocytosis in adult cats with adrenal insufficiency. Swingle found a marked decrease in blood sugar, while, simultaneously, the phosphorus, protein, non-protein nitrogen and urea of the blood increased in adrenalectomized cats.

Of great practical importance, accordingly, is the fact that the disturbance in adrenal insufficiency is a generalized one. An interesting historical substantiation of this fact is found in Addison's coming upon this disturbance in adrenal function while he was studying certain of his cases of pernicious anemia.

The general medical aspects of adrenal insufficiency, particularly as regards its recognition clinically, are exceedingly involved. In some of the cases, probably the earliest indication of adrenal insufficiency has been the abdominal pain, which resulted from the destructive process in the adrenal glands. Although atypical in distribution, and accompanied by few, if any, of the usual physical and laboratory findings, this pain has frequently been considered indicative of an acute inflammatory process of the appendix. The second of our patients was operated upon at the age of fourteen years for just such an attack of "appendicitis," at which time an appendix which proved to be his-

tologically normal was removed. Death of Saphir and Binswanger's second case occurred during operation for "appendicitis" at which time likewise a normal appendix was removed. Brenner's first case had an appendectomy at the age of twenty-eight, four years before his death from adrenal insufficiency, for "chronic appendicitis." This operation, details of the clinical history of which are not recorded, occurred following "pleurisy" at the age of twenty-five, and in turn was followed by "pneumonia" at the age of twenty-nine and "gastric influenza" at the age of thirty years.

Recurrent vomiting, a symptom rather than a disease entity, which, however, in the absence of a discoverable etiological agent in certain of the cases is considered as the latter, is a feature of certain of the cases of adrenal insufficiency. The low blood sugar which accompanies the vomiting in this type of disturbance, frequently raises the question, in attempts to explain its significance, as to whether the low blood sugar is the cause of the vomiting or its result. Females are usually the ones susceptible to this, while in the case of our second patient the vomiting occurred about the time for the catamenia.

Epidemic encephalitis, one of the diseases which presents in varied and bizarre forms, has often been considered as the cause of the symptoms in adrenal insufficiency and other closely related disturbances. Differentiation can, however, be made practically immediately by the determination of the blood sugar value, which, if subnormal, excludes epidemic encephalitis. McClenahan and Norris report a case in which the provisional diagnosis, following an illness of six to eight months' duration and characterized by transitory loss of memory, was changed from epidemic encephalitis to adenoma of the islet tissue after close observation of the patient.

Simmonds disease, or hypophyseal cachexia, presents in general a gradually downhill course. A previously normally developed individual, following a severe acute infection, or following the onset of any actively destructive process in the pituitary, gradually loses weight and strength, all of the tissues and organs of the body show progressive atrophy and exitus may come within a short or moderately long period. The blood sugar is usually constantly at a low level and it is this coupled with the asthenia that makes differentiation from adrenal insufficiency a difficult problem.

Hyperinsulinism, resulting from carcinoma or adenoma of the islet cells of the pancreas, is a disturbance which clinically may simulate adrenal insufficiency to a very great degree. In the case of islet cell tumor reported by Derick and his colleagues, for instance, the attacks of vertigo and fainting which could be relieved by the ingestion of carbohydrate, the periodic attacks of vomiting, the later attacks indicative of cerebral involvement, all with concomitant low blood sugar values, are symptoms which might perfectly correctly indicate the presence of adrenal insufficiency. The progressive increase in severity of the hypoglycemia in this particular case was, however, in favor of the diagnosis of islet cell tumor. The great difference in treatment, surgical extirpation for the islet tumor and substitution therapy for the adrenal insufficiency, are witness enough to the need of accurate diagnosis.

Neurasthenia, a diagnosis which should be made only with extreme caution, is used exceedingly frequently to catalogue patients with adrenal insufficiency. It is impossible at the present time in many cases in which adrenal disturbance is suspected to either prove or disprove its existence. Under the present circumstances, however, when the diagnosis is in doubt, the best procedure is continued accurate and adequate observation of the patient. In Rabinovitch and Baldwin's case of adrenal insufficiency, the onset was characterized by a change of personality to melancholy and despondency. If excessive amounts of sugar and sweetened foods were taken there soon resulted a feeling of well-being on the part of the patient, together with a sense of being more alert. Many symptoms, prominent among which were nervousness and nausea, anorexia, frequent vomiting and gradually increasing weakness, are suggestive at first of neurasthenia rather than adrenal insufficiency from which Saphir and Binswanger's first patient died. Brenner's second patient following a severe mental shock had "dyspepsia" with occasional vomiting, steady loss of weight, and a gradually increasing pigmentation for the year preceding death.

In resumé, then, adrenal insufficiency, of which Addison's disease is one, and adrenal atrophy is a second type, is manifest clinically by a most varied group of symptoms and physical signs. The general metabolic and functional changes which are common to both were originally recognized and dis-

cussed by Addison and Wilks, while more recently they have been placed upon a more accurate basis by biochemical determinations. Diagnosis, particularly if it is to be accurate in the earlier stages, can, however, be made only after a most thorough analysis of all the evidence available. The importance of such accurate diagnosis has very practical aspects in that it decides in favor of substitutive therapy in adrenal insufficiency as contrasted to operative intervention in islet cell tumor, goes far towards establishing a sense of well-being in the adequately treated patient, and minimizes the possibility of sudden unexpected death in young persons.

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IMPROVED TREATMENT OF APPENDICITIS—WITH RESULTS IN 502 CONSECUTIVE CASES AT ST. ELIZABETH'S HOSPITAL.*

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The surgical treatment of the simple inflamed appendix should not involve any mortality or morbidity, yet we find from the vital statistics of the United States that the mortality rate for appendicitis increased from 9 per 100,000 in 1920 to 15 per 100,00 in 1932. In other words, about 20,000 persons die each year from appendicitis.

For this reason more attention is being paid to this condition, and the medical profession has been trying to find the cause for this alarming and unnecessary increase in mortality.

Undoubtedly one of the chief causes for the increase in mortality has been the patient's delay in seeing the doctor and the use of "home treatment" which generally consists of taking large doses of laxatives and purges. Frequently it is only after this treatment fails to relieve that a doctor is called. No doubt the depression is partly responsible for this situation. We know that cathartics have no place in acute intestinal upsets, yet probably over half of the patients with acute appendicitis admitted to St. Elizabeth's Hospital have taken some type of cathartic after their pain and discomfort had begun, and it is not unusual for the patient to take several doses of salts, black draught or castor oil before calling the doctor.

Another reason for the increased death rate is the practice of the so-called delayed or deferred operation in certain cases. This is being advocated and practiced very widely in cases thought to have spreading peritonitis; however, everyone is in accord that in its early stage the acute appendix should be removed immediately. It is often impossible to tell

*From the Surgical Department, St. Elizabeth's Hospital.

Presented at the meeting of the Mid-Tidewater Medical Society, Saluda, Va., April 23, 1935.

before operation whether the patient has simple acute appendicitis or an early rupture with beginning peritonitis. There are many signs, symptoms and laboratory findings that will greatly aid in arriving at a diagnosis, but these often fail if we attempt to determine by them the extent of the lesion. There is only one good rule to follow in infections of the appendix, and that is, once the diagnosis is made, the appendix should be removed as soon as possible. It is neither logical nor physiological to leave pus in the peritoneal cavity where it will continue to be absorbed. We do not wait for peritonitis, caused by the rupture of other hollow viscera, to wall off, but close the rupture and remove the pus. Obviously peritonitis from a ruptured appendix should be treated in a similar way.

The operative technic employed in removing the appendix has much to do with the subsequent mortality and morbidity rate. To be sure, if there is a large mid-line incision, rough handling of the tissue, with sponging and irrigating of the peritoneal cavity, there will be more immediate absorption and possibly a higher mortality than if the operation was deferred until an abscess formed. However, with a small muscle-splitting McBurney incision, gentle handling of the tissues, withdrawal of the septic fluid with a suction apparatus and the removal of the appendix, excellent results may be obtained.

The advantages of using a small, muscle-splitting McBurney incision are obvious. It is almost impossible for a hernia to develop from such an incision, even though the peritoneal cavity is drained. Dr. Mont Reid, of Cincinnati, has recently reported that his mortality rate in cases of acute appendicitis has been markedly reduced since he has changed from the mid-line incision to the McBurney type.

At St. Elizabeth's Hospital we never invert the stump of the appendix. We sever the appendix with the electric cautery, after ligating the base with chromic catgut, carbolize the stump, and pass the ends of the ligature through adjacent peritoneal covered fat. We never bury the stump of the appendix with a suture in the cecum. Burying the stump of the appendix may look well, but biologically it does not appear to be good surgery, for it creates a closed pocket containing necrotic material (the ligated stump) which dangles in the septic lumen of the cecum. Furthermore, the vascular nutrition to the walls of this pocket is diminished by the purse-string suture used in the cecum.

It has been said that most of the larger clinics, such as the Mayo Clinic, have continued to bury the stump of the appendix and that this was the chief reason other surgeons continued this practice. Recently, Dr. C. W. Mayo, of the Mayo Clninc, in an article published in the December, 1934, issue of *Southwestern Medicine,* stated that he did not invert the appendix stump and gave the following reasons: "(1) Dr. Robertson, of the Section on Pathologic Anatomy at the Clinic, has found that invariably in cases in which appendectomy with inversion of the stump has been done in combination with some other surgical procedure and death has resulted, there is a pus pocket in the inverted stump up to twenty-one days post-operative; (2) the cultured suture material used to invert the stump, once having run through the intestinal wall, invariably is infected with pathogenic bacteria; (3) non-inversion shortens the surgical procedure, and (4) I have not had occasion to regret not having inverted the stump."

Dr. Robertson, who is the head of the Pathological Department at the Mayo Clinic and has charge of all of the necropsies, has for a long time advocated the simpler technic, and believes that inversion of the stump is wholly illogical and a dangerous procedure.

We have frequently had occasion to examine the cecum of patients who have previously had appendectomies, and often those who have had the stump inverted will have a hard knot in the end of the cecum with a few adhesions to this region, or a small diverticulum. On two occasions small pieces of linen which had been used as the purse-string suture were still in the cecum and apparently causing some irritation. No diverticula, fewer adhesions, and less thickening of the cecal wall have been found in those cases in which the stump was treated simply and not inverted.

The following is a report of a series of 502 cases of appendicitis. This includes all appendicitis cases admitted to St. Elizabeth's Hospital between January 1, 1931, and December 31, 1934, but does not include those cases in which the appendix was removed incidentally along with another operation. Every patient known to have acute appendicitis was operated upon at once and the appendix removed, and no secondary operation has had to be done to

APPENDECTOMIES DONE AT ST. ELIZABETH'S HOSPITAL FROM JANUARY 1, 1931 TO JANUARY 1, 1935

	No. of Cases	*Deaths*	*Per-centage*
Acute appendicitis	294	2†	0.68
Acute appendicitis with peritonitis	64	2	3.1
Subacute and chronic appendicitis	143	0	0
Carcinoma of appendix	1	0	0
	502	4	0.80

†One death from pulmonary embolus the day before the patient was to be discharged; the other death from abscess involving the left tube and central part of the ileum.

remove the appendix. In no case was the operation delayed, no matter how ill the patient appeared to be. The total number of cases was 502, with four deaths, a mortality rate of a little less than .8 per cent. The cases are divided as follows:

Acute appendicitis, with 294 cases and two deaths, a percentage of .68 per cent;

Acute appendicitis with peritonitis, sixty-four with two deaths, a percentage of 3.1 per cent;

Subacute and chronic appendicitis, 143 cases with no deaths;

Carcinoma of the appendix, one case with no death.

The cases that died are as follows:

No. 1. Man, age 59 years, had acute gangrenous appendicitis. The appendix was removed immediately after admission to the hospital, and the patient made a most satisfactory immediate convalescence except for a small amount of fibrous pleurisy found on the right side ten days after operation. This had completely cleared up and on the day before the patient was to be discharged, he died suddenly from pulmonary embolism.

No. 2. Man, age 72 years, had a retrocecal appendiceal abscess. The appendix was removed and the wound drained. Two days later there was an exacerbation of an old chronic bronchitis, with pulmonary edema. He recovered from this but after two more days he developed signs of intestinal obstruction and recurrent pulmonary edema and died. An enterostomy had been done without avail.

No. 3. Woman, age 34 years, was thought to have acute appendicitis and retroversion of the uterus. The appendix was removed. There was an abscess about the left tube and adherent to the ileum which was not in any way associated with the appendicitis. The abscess was drained and part of the ileum resected. Five days after operation the patient died from intestinal obstruction and localized peritonitis on the left side.

No. 4. Woman, age 17 years, was brought to the hospital in a moribund condition. She had been delivered of a normal pregnancy three weeks before and had complained of pain in her right side for four days. At first she was thought to have pyelitis as there were abundant pus cells in the urine, or pelvic infection. These were ruled out and at operation a ruptured appendix with general peritonitis and three feet of gangrenous bowel were found. The appendix and a segment of bowel were removed. Eight days after operation the patient died from overwhelming peritonitis.

In this series of cases, we have had only three fecal fistulae develop, and these closed without further operative intervention. I believe this low figure can be attributed to three facts: use of muscle-splitting incision which tends to close of its own accord, early removal of drains, and not inverting the stump of the appendix. When sutures are placed in the cecum and tied in a purse-string manner, a small area of cecal tissue does not receive the proper blood supply and may slough. If the tissue sloughs within the bowel, no complication may follow, but if it sloughs outside the bowel, an abscess, peritonitis or a fecal fistula will develop.

The post-operative treatment of the uncomplicated cases of appendicitis is simple and needs very little comment. We allow such patients nothing by mouth except water for the first twenty-four hours after operation, clear broths, tea and coffee for the second twenty-four hours, after which time the diet is gradually increased. Enemas are not given until the third or fourth post-operative day, as an enema given before this time will usually have to be siphoned back and will only increase the patient's discomfort.

In cases with peritonitis, the patient is given 5 per cent dextrose in Ringer's solution intravenously, the amount varying in the individual cases, according to the extent of the infection and the patient's general condition. These patients are given nothing by mouth except very small amounts of tap water, and in cases of extensive peritonitis frequent gastric lavages are done. Often in such cases we use a Jutte tube which is passed through the nostril and the tube aspirated and the stomach lavaged every one to two hours. The use of abundant hot wet supersaturated boric acid dressings over the en-

tire abdomen is also helpful. Neither enema nor proctoclysis should be used for the first week or ten days when peritonitis is present, and then only when the temperature and pulse have returned to normal. No harm will come from the patient being constipated during the first few days, and any attempt to produce a bowel movement will often aggravate a subsiding peritonitis.

In the drainage cases, we use soft cigarette drains with or without an accompanying soft rubber tube, and do not suture the muscles and fascia together. The cigarette drains are removed in twenty-four to forty-eight hours, and the rubber tube is moved and shortened in three to four days, depending upon the amount of drainage. This tube is shortened from 1 to 3 cm. every other day and finally removed. After three to five days, we irrigate the abdominal wound with normal saline or 2 per cent chlorazene under low pressure. When the drainage begins to subside, we approximate the wound edges with adhesive. It is surprising how quickly and satisfactorily these wounds close and heal into a firm scar. To my knowledge, there have been no post-operative hernias in any of these 502 cases.

SUMMARY

1. Report of 502 consecutive appendectomies at St. Elizabeth's Hospital, with four deaths, mortality rate of 0.8 per cent.

2. These results were brought about by using the muscle-splitting incision, by the simple treatment of the stump of the appendix, by liberal use of 5 per cent dextrose in Ringer's solution intravenously, avoidance of irrigation of peritoneal cavity during operation and enemas and proctoclysis afterwards, the use of gastric lavage tube or continuous gastric drainage in cases of peritonitis; last and most important by immediate operation, with the use of suction in cases of peritonitis—this will draw out the septic material, while sponging with gauze would smear it in.

A NOTE ON VON GIERKE'S DISEASE, A NEW DISEASE OF CHILDREN.*

ERNEST G. SCOTT, B. S., M. D.
Lynchburg, Va.

Von Gierke's disease was first described by the man it is named for in 1929.[1] This German physician in that year published the results of his post-mortem studies in an eight-year-old girl, who had died of influenza. The title of his paper is "Enlarged Liver and Kidneys Due to Glycogen; Glycogen Storage Disease of the Liver and Kidneys." He later reported a second case in a four-year-old boy who died of pneumonia. In 1932 Schall[2] reported three cases; in 1933 additional cases were reported by Smith,[3] Worcester-Drought,[4] Warner,[5] Soloman and Anderson,[6] and Hertz.[7] Thus, at present, as far as I know, a total of ten cases have been reported.

Terminology.—While the modern tendency is to avoid eponymic descriptive terms, still it seems that Von Gierke's disease, because it is shorter, is preferable to the other names that have been proposed. These are—glycogen storage disease; glycognosis; glycogen accumulation disease, familial hepatomegaly.

The signs and symptoms have been added to by various authors, until the disease is now a clear-cut entity. Von Gierke says a positive diagnosis can only be made by liver puncture or biopsy, but this should be unnecessary in the well-developed case. This is a disease of children. None of the described cases have been over eleven years old, the youngest two, although one author describes a case in retrospect in a normal twenty-two-year-old girl who at the age of ten had symptoms of the disease. Of the reported cases, girls and boys are about equally divided. The most striking physical sign is an enormous enlargement of the liver which often reaches below the level of the navel. It is hard, non-tender and not dependent upon any ascertainable cause such as heart trouble or syphilis, etc. These children are under-sized and apparently fat, although they weigh less than normal for their age.

*Read before the Lynchburg Academy of Medicine, October, 1934.

Their mentality is normal. Persistent acetonuria has occurred in a number of cases, but is not essential to the diagnosis. A low blood sugar is regularly found. Convulsions or epileptiform seizures are frequently seen—due to hypoglycemia. A high fat content of the blood is usual. Steatorrhea sometimes occurs. A test which undoubtedly will prove of great value is the blood sugar curve after adrenalin injection. Whereas normally the blood sugar will rise after adrenalin, in this disease a flat "curve" is found. Finally, this is a familial disease. Being so recently discovered, it is not known whether the parents of the children were affected as children themselves, but observations on other members of the family have revealed a number of cases in brothers and sisters of the patient.

The mortality is unknown. The pathologic studies have been made on cases that died of some intercurrent disease. Worcester-Drought's case was diagnosed in retrospect at age of ten, while she was at the time of his report an apparently normal and healthy girl of twenty-two. However, he made no blood studies of her when grown. Warner's case in a girl, age two, was apparently well at the age of five.

Post-mortem studies have revealed a markedly enlarged liver due to distention of liver cells with glycogen and glycogen infiltration of the kidneys which are slightly enlarged. The pathogenesis is supposed to be a disturbance in the liver enzyme which breaks down glycogen. Apparently sugar is converted into glycogen normally, but the reverse of this process is interfered with. This theory accounts for the symptoms very well—enlarged liver, low blood sugar, acetonuria, flat curve after adrenalin, hypoglycemic attacks.

As is true with any new disease once it is clearly defined, new cases are rapidly found, and it frequently happens that the rarity of the condition is over-estimated at first. It is well to be familiar with this condition as it is probably not as rare as the number of reported cases would lead us to believe.

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Allied Arts Building.

Correspondence

Conjunctivitis.

TO THE EDITOR: PETERSBURG, VA.

In nearly all types of conjunctivitis, both acute and chronic, the cure can be effected much sooner if the lachyrmal sac and duct are flushed out with an antiseptic solution. I prefer argyrol 20 per cent.

This is accomplished most easily by first dilating the punctum with the regular punctum dilator, which can be had in graduated sizes.

Butyn is applied on a cotton applicator to the punctum. Then, after waiting about eight minutes, the sac and duct are flushed in the usual manner.

I find that none of my chronic cases get well, to remain so, unless I do flush out the lachrymal channels.

D. D. WILLCOX, M. D.

118 West Tabb Street.

Woman's Auxiliary to the Medical Society of Va.

President—MRS. FLETCHER J. WRIGHT, 49 S. Market St., Petersburg.

President-Elect—MRS. F. D. WILSON, 5352 Studley Ave., Norfolk.

Corresponding Secretary—MRS. MEADE EDMUNDS, Walnut Hill, Petersburg.

Recording Secretary—MRS. HAROLD W. POTTER, 70 33rd St., Newport News.

Treasurer—MRS. REUBEN F. SIMMS, 2502 Hawthorne Ave., Richmond.

Report of Delegate to Southern Medical Association.

The Southern President, Dr. H. Marshall Taylor, brought greetings at the twelfth annual meeting of

the Woman's Auxiliary to the Southern Medical Association in St. Louis, Mo., November 20th and 21st, and asked that the Auxiliary assist in the drive to increase the membership of the Southern Medical Association. Dr. Seale Harris, Chairman of the Advisory Committee, said: "The Woman's Auxiliary has arrived, it has the complete recognition of the Southern Medical Association." He also gave the Auxiliary credit for the increase in membership and attendance. In quoting Thomas Jefferson, "truth will set you free," he urged the Auxiliary to use its efforts to educate youth, teaching them the difference between truth and propaganda.

Mr. Loranz explained the new type of organization for the Auxiliary. It must always remain scientific and social, not to overlap any other organization, the code of ethics to be the same as that of the Southern Medical Association. Any member of a county medical society can be a member of the Southern. The women members of his immediate family automatically become members of the Auxiliary.

Mrs. Bonar White, President of the Southern Auxiliary, urged thorough training of officers. This is most essential before they assume office. She explained that "Doctor's Day" is a day which the Auxiliary can set aside to honor the medical profession.

Mrs. Rogers N. Herbert, President of the Auxiliary to the American Medical Association, spoke of the C.C.C.—Concentration, Cooperation and Consecration. She said that the Auxiliary is the standard bearer of health and human kindness, where prejudice and jealousy have no place. The Auxiliary's duty is to assist the A.M.A. in its battle to make the United States free from disease. We must enlighten ourselves to what our doctors are doing. It is for us to see if the public is receiving information or misinformation. Health education is more and more a vital part of programs in educating the laity and these programs must be definitely planned and built on facts. Let us make our women more educated, more helpful, more worthy to serve the medical profession, and to be our doctors' wives.

Mrs. David Long, National Chairman of Public Relations, said: "What can I do to interest these women who say, 'we do not need an auxiliary—we are over-organized.' I would say—you do not realize what a privilege it is to touch souls with those fine women, the doctors' wives. Are you not proud to be the wife of that man set apart as Robert Louis Stevenson said, 'Set above the common herd'? I am so proud to be my doctor's wife, so proud to be a part of this great medical profession, that it is easy and natural for me to work." Mrs. Long said that public relations would raise the level of health; that auxiliaries are assisting the high-school students all over the land in their debate on socialized medicine, as they are supplying the material for these debates, and giving the children facts. The Auxiliary was urged to publicize the A.M.A. programs, each Friday afternoon at 5:00.

The new President of the Southern Auxiliary, Mrs. Oliver Hill, was unable to be present due to the illness of Dr. Hill. The President-Elect is Mrs. Frank Haggard of San Antonio.

The attendance was 383 registered members.

The Organization reported 1,179 members and 189 Auxiliaries.

Increase since last year: Members, 803—Auxiliaries, 28.

It was voted and carried that the three immediate past presidents be an Advisory Committee.

The Chairman of Research reported much interesting material in the "Lending Library," available to county auxiliaries for programs, etc. This material will be sent for ten days at mailing cost only, to the county auxiliaries. The Chairman urged that all programs on medical history be preserved.

There was a recommendation that the medical journal of each state be sent to the Chairman of Publicity.

The Auxiliary was beautifully entertained by the St. Louis Auxiliary. Arrangements were delightfully planned and carried out.

Baltimore, Md., has been selected as the 1936 Convention city.

Respectfully submitted,
ALICE LEIGH,
(MRS. SOUTHGATE LEIGH),
Delegate.

The Auxiliary to the Princess Anne Medical Society

Reports that $75 was realized on a benefit card party held in November. Cod Liver Oil, to be distributed to the indigent children of the county, will be purchased with a part of the funds. At the December meeting it was voted to donate $5 to the

Woman's Club for a Christmas party for underprivileged children.

This Auxiliary was only organized eight months ago, and has a membership of six. This is their initial effort to make money to aid in welfare work, and they are to be congratulated upon their splendid achievement.

Auxiliary to the Richmond Academy of Medicine.

At the November meeting, Dr. C. L. Outland, Medical Director of Public Schools, and Dr. Joseph F. Geisinger were guest speakers. The Auxiliary has decided on two objectives for this year's work. It plans to continue the Milk Fund which was established several years ago. This Auxiliary will continue to contribute $10 per month during the school year to provide milk for undernourished children in the Richmond Public Schools. The Milk Fund was the topic of Dr. Outland's address. He stated that milk was given only in cases where it was most needed, irrespective of whether the children were colored or white. He also stated that records had been kept over a period of time on the children who received the milk, and that marked improvement was shown both as to mental and physical fitness.

Dr. Geisinger's topic was concerned with the establishment of the Academy's Pathological Museum, to which the Auxiliary gave $50 last year, as a Foundation Fund. The Auxiliary plans to donate $200 more toward this fund during 1936.

Dr. Joseph Bear will give a talk on Maternity Care at the December meeting of the Richmond Auxiliary. This is to be the first of a series of three talks by Richmond physicians on the subject of Maternity and Child Care.

The James City-New Kent Medical Auxiliary

Held its December meeting at the home of Mrs. W. L. L. Smoot, of Williamsburg, with the president, Mrs. A. M. Snead, of Toano, presiding.

An interesting report of the State medical convention was given by Mrs. T. B. Henderson, Williamsburg. Mrs. E. T. Terrell, who had charge of the program for the afternoon, gave a most interesting reading on the "Pilgrim Physician." Mrs. J. R. Tucker prepared an attractive *Hygeia* poster to be sent to the P. T. A. meeting, thus hoping to convince mothers of the importance of having *Hygeia* in their homes. Two new subscriptions were taken at this meeting. MABEL HENDERSON, *Reporter.*

Help Your Publicity Chairman.

The Press and Publicity Chairman is most anxious to include news items from every section of the State in this Department of the MONTHLY. This can only be done with the help of all members. It will be appreciated if the Presidents of the various auxiliaries will instruct their proper officers to see that reports of meetings and other news of interest are sent to Mrs. James B. Stone, Press and Publicity Chairman for the State Auxiliary, 15 Maxwell Road, Richmond, Va., by the 10th of each month.

Public Health Statistics

I. C. RIGGIN, M. D.
State Health Commissioner of Virginia

The communicable disease reports received at the office of Dr. G. F. McGinnes, State Epidemiologist, for the month of November, 1935, show the following cases compared with the same month in 1934:

	1935	*1934*
Typhoid and Paratyphoid Fever	51	39
Diphtheria	301	385
Scarlet Fever	301	544
Measles	116	631
Meningitis	8	9
Poliomyelitis	8	4
Rocky Mountain Spotted Fever	1	0
Typhus Fever	1	1
Undulant Fever	3	2
Tularaemia	14	5
Smallpox	0	0

Mention has been made in previous articles of the slightly increased prevalence of meningococcus meningitis in Virginia during 1934 and 1935. A review of reported cases of this disease for the past three years show the following number per year: 1933—88; 1934—115; 1935 (Jan. to Dec.)—235.

While these figures are not alarming, there would seem to be evidence that the prevalance of this disease may increase still more during 1936. With a continuation of Transient and C. C. C. Camps, where there is an unusual concentration of individuals, a fertile ground is prepared for the growth and dissemination of the meningococcus. Necessarily, life in barracks and sleeping halls of such organizations is more congested and intimate than in civilian habitations. These conditions are most favorable for the development of cerebrospinal fever.

The records of the Virginia State Health Department show that following the two previous epi-

demic periods of poliomyelitis in Virginia (1916-17 and 1929) there was a definite increased prevalence of cerebrospinal meningitis in the year following each polio increase. The number of reported cases of poliomyelitis and cerebrospinal meningitis are shown below for the periods 1915 to 1918 and 1928 to 1930.

	1915	1916	1917	1918	1928	1929	1930
Poliomyelitis	267	345	318	123	97	325	119
Meningitis	269	167	181	346	49	84	131

It may therefore be of interest to briefly review a few facts concerning the disease, especially in regards to diagnosis and treatment.

Vaughan describes cerebrospinal meningitis as a feebly infectious, highly fatal disease, due to the diplococcus intracellularis meningitides, more simply and properly designated as the meningococcus. The organism was described and suggested as the specific cause of epidemic meningitis by Weichselbaum in 1887. It is almost universally accepted as the specific causative agent of this disease whether occurring epidemically or sporadically. The meningococcus occurs in pairs, not infrequently in tetrads. In the cerebrospinal fluid the diplococci are characteristically located within the cells of the exudate, though by no means confined to this location. The organism takes the ordinary aniline stains and is decolorized when stained by Gram's process. It is differentiated from other members of the gram negative cocci group to which it belongs by its reaction with various sugars and other cultural and serological characteristics. That different strains of the meningococcus exist is now generally accepted, though a technical discussion of this phase of the bacteriology of the disease seems unnecessary in an article of this kind other than to state that commercial polyvalent antimeningococcus serum is prepared to agglutinate meningococci of the regular, irregular and intermediate groups as well as representatives of the four types of the meningococcus as determined by Gordon.

A few general epidemiological characteristics of the disease may be of interest. In regards to geographic distribution, epidemics have occurred practically all over the world under varied conditions of climate, topography, commercial relations and social conditions. It shows no constant relation to elevation, moisture or bodies of water.

Cerebrospinal fever does not present the epidemiological characteristics which we are accustomed to associate with a contagious disease. Usually there is not more than one case of this disease in a home in civil life or in a barrack or company of soldiers. There are exceptional instances however, when it attacks large numbers in certain groups.

The disease is most prevalent in the spring and late winter. Children are attacked much more frequently than adults. The most susceptible age is under five years. Among adults the disease has often been more prevalent in military garrisons than in the civil population. The incubation period is usually two to ten days and tends to be short in epidemics. In some cases where a carrier develops the disease the period may be longer. The mode of transmission is by direct contact with infected persons or carriers harboring the causative agent in the upper respiratory tract.

SYMPTOMS: The onset of the disease may be sudden or the development may be more gradual. The most common of the early symptoms is headache. As a rule it is acute and violent and comes on in paroxysms. Vertigo may be an early and continuous complaint. Vomiting, especially when the onset is sudden, is an early symptom in the majority of cases. Generally it is of the projectile type. Early prostration is frequent and usually quite complete. Delirium is a frequent though not a constant symptom of this disease. Hyperesthesia of the skin is not uncommon. One of the most characteristic symptoms is rigidity of neck muscles or the muscles of the back. This may be accompanied by more or less marked opisthotonos. While this symptom is not present in every case, when it is found, especially during periods of increased prevalence of the disease and when tetanus is excluded, it is almost pathognomonic. Convulsions may appear especially in young children.

Many types of eruptions have been reported as occurring in this disease but none are characteristic and undoubtedly they were much more frequently observed in the early epidemics than in later ones. Within recent years herpes labialis has been the most commonly reported eruption.

The duration of the disease is subject to wide variation. Hirsch states the duration is between a few hours and several months. Relapses are not infrequent. Convalescence may begin as early as the third day but is usually slow and may require

many weeks for recovery. The most fatal period is from the second to the fifth day but death may occur before or after this time.

Diagnosis is confirmed by lumbar puncture and the demonstration of the meningococcus in the cerebrospinal fluid. Lumbar puncture should therefore be made upon the first suspicion that the case may be one of cerebrospinal meningitis. Rather than suffer the delay incident to a bacteriological report the physician should be prepared to make the first injection of serum at the time the diagnostic puncture is done. If the fluid is turbid it indicates an acute inflammatory process due to bacterial infection. The danger attending a useless injection of serum in a case of meningitis due to another cause is slight as compared to the danger of delaying its administration in a case of meningococcus infection.

It is well to remember that meningitis may be caused not only by the meningococcus but by other organisms as well. Tuberculous meningitis is by no means rare. Pneumococcic meningitis, streptococcic meningitis and meningitis caused by Pfeiffer's bacillus, Friedlander's bacillus, and Gaertner's bacillus occur somewhat less frequently. Syphilitic meningitis, when it occurs, which it does rarely in the secondary stage of this disease and simultaneously with a cutaneous eruption, may be mistaken for cerebrospinal fever.

The importance of early lumbar puncture and careful bacteriologic and microscopic examination of the spinal fluid in the diagnosis of meningitis and the identification of the causative agent is again emphasized.

TREATMENT: The use of antimeningococcus serum in the treatment of this disease has been established as a therapeutic measure of such well-proven efficacy that its use becomes imperative. The serum is administered intraspinally, very slowly and at body temperature. This is best done with a suitable gravity apparatus. When the disease is recognized in the early stages it would seem advisable to give rather large doses intravenously. The amount of spinal fluid withdrawn before injection should be equal to or greater than the amount of serum to be administered. Experience has shown that the best results can be obtained only by repeated injections. At least four to six injections of full doses of serum at intervals of twenty-four hours should be given and after that one should be guided by the clinical signs and changes in the cerebrospinal fluid. Too much emphasis cannot be placed upon the early administration of serum. The duration of the disease at the time of first injection greatly influences the final result of serum therapy. Given within the first three days we may expect the most good.

Serum then, when promptly, properly and freely used, effects a substantial reduction in mortality, shortens the course of the disease and reduces the proportion of disastrous sequelae.

Symptomatic and supportive treatment should be instituted. Relief of distressing symptoms, proper elimination, adequate fluid and nutritional intake, and rest are important. A cool quiet room with adequate circulation is desirable. The patient should be isolated and discharges from the nose and mouth properly disinfected.

Truth About Medicine

In addition to the articles previously enumerated the following have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association:

Parke, Davis & Co.

Gas-Gangrene Antitoxin (Combined) Refined and Concentrated—P. D. & Co.

New and Non-Official Remedies

Surgical Solution of Mercurochrome.—Mercurochrome (New and Non-official Remedies, 1935, p. 1606) 2 per cent dissolved in a vehicle consisting of 55 parts of 95 per cent alcohol-U. S. P., 10 parts of acetone-U. S. P., and 35 parts of water, to which has been added sodium carbonate in the proportion of 0.1 per cent. Hynson, Westcott & Dunning, Inc., Baltimore, Md.

Ipral Sodium Tablets, ¾ grain.—Each tablet contains Ipral Sodium (*The Journal A. M. A.*, June 1, 1935, p. 1999) ¾ grain. E. R. Squibb & Sons, New York.

Ipral Sodium Tablets, 2 grains.—Each tablet contains Ipral Sodium (*The Journal A. M. A.*, June 1, 1935, p. 1999) 2 grains. E. R. Squibb & Sons, New York.

Gas-Gangrene Antitoxin (Combined) Refined and Concentrated—P. D. & Co. (New and Non-official Remedies, 1935, p. 366).—This product is also marketed in vials containing 10,000 units of perfringens antitoxin and 10,000 units of vibrion septique antitoxin. Parke, Davis & Co., Detroit, Mich. (*J. A. M. A.*, November 30, 1935, p. 1771).

Book Announcements

Behavior Development in Infants. A Survey of the Literature on Prenatal and Postnatal Activity. 1920-1934. By EVELYN DEWEY. Published for the Josiah Macy, Jr., Foundation. By Columbia University Press. New York. 1935. Octavo of viii-321 pages. Cloth. Price, $3.50.

This book is just what it purports to be. The author has carefully and conscientiously reviewed the literature concerning the behavior development of the human during the fetal, neonatal, and infant periods, which has accrued since 1920. This is prefaced by a chapter which takes up the two theories of behavior development, the Behaviorist Theory and the Gestalt Theory, briefly, and adds evidences from biology and neurology tending to bear out different points in these theories. She also devotes a short section to a review of work on the correlation of structure and function from animal studies.

Because in studies of child development the general tendency has been to assemble data in terms of chronological periods of the child, the author found it necessary to assemble her book in the same way. She, therefore, has a section on Behavior of Human Fe[illegible], one on Neonatal Behavior most commonly accepted as extending from time of birth to healing of the umbilicus, and one on Behavior during Infancy commonly including the phase from healing of umbilicus to the end of the second year. In these chapters an earnest attempt has been made not merely to give quotations from the outstanding workers in this field, but to assimilate, interpret, and compare the different experiments, ideas, and conclusions drawn by these workers.

Even for one interested in the subject, this book is rather dry reading on the stretch. It would not seem to appeal to the average layman. However, as a reference book it will be found very valuable by the practitioner, and especially the pediatrician.

LOUISE FRY GALVIN.

Diseases of the Thyroid Gland. By ARTHUR E. HERTZLER, M. D., Chief Surgeon, Halstead Hospital; Professor of Surgery, University of Kansas. With a Chapter on Hospital Management of Goiter Patients. By Victor E. Chesky, M. D., Chief Resident Surgeon, Halstead Hospital. Third Edition, Entirely Rewritten. St. Louis. The C. V. Mosby Company. 1935. 348 pages, 9½x6½ inches. Illustrated. Cloth. Price, $7.50.

This book deals with the surgical technic of thyroid operation and the medical aspect of thyroid disease. The book is divided into sixteen chapters, each of which completely covers its assigned subject. Chapters I and III on the general considerations and etiology of goiter are particularly valuable, not only to doctors doing specialized work in thyroid disease, but also to general practitioners and surgeons, for the information in these chapters gives a better understanding of the problem confronting the doctors who treat these cases. The importance of a close association of the internist and surgeon is stressed, and this is particularly valuable in toxic cases.

The author states that a satisfactory classification of goiters cannot be given, as it is impossible "to construct a series of diseases out of a continuous process." He states also that the goiters that are cured spontaneously or by non-operative procedures are confined entirely to those of the adolescent period and that he has seen no case outside of this period cured without operation. The pathology discussion of the different conditions is good, and is accompanied by clear illustrations of gross and microscopic specimens.

The chapter on hospital management is very timely; however, I believe better results are obtained in toxic cases by a freer use of dextrose intravenously instead of by saline hypodermoclysis. In this way the patient is able to utilize the dextrose and is not forced to burn his own tissues. In the chapter on anesthetics only two short paragraphs are used in the discussion of general anesthetics, while over seven pages are devoted to local anesthesia. The disadvantages given for the use of general anesthetic, namely, that it necessitates an expensive apparatus and the services of a trained anesthetist, hardly seem logical, as all hospitals where this type of surgery is done already have the necessary apparatus and assistants. The author failed to mention the use of avertin or barbiturates in conjunction with general anesthetics; these have been found most useful and valuable in toxic cases.

The sections dealing with surgical technic, the use of Lugol's solution, the interpretation of the general condition of the patient from both metabolism and pulse rate, and the postoperative instructions to the patient, are excellent.

This book is so arranged in chapters, subdivisions and an index that it will also be very valuable as a reference book.

GUY W. HORSLEY.

Virginia Medical Monthly

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Editorial

The Emblem of Medicine.

It is an old question, recently resurrected in certain quarters. The impression seems to be abroad that at some time in the past some person or some group of persons arrived at a definite, unchangeable medical emblem by a process of ratiocination, and that the *ipse dixit* of some organization has fastened on us this one and only emblem, any variation from which constitutes high treason. It has not been long since a minister noting the "evident pride of our physicians in the emblem of their profession," felt called upon to correct our "entirely erroneous conception of what in fact is the emblem of the healing art," and with great display of learning, including an impressive sally into the by-paths of etymology, attempted to set us right in our heraldic application of Olympian mythology.[1] As a matter of fact symbols such as ours are derived from multiple origins and usually evolve slowly through many variations, through many centuries of flux. The most important origin in the case of medicine is undoubtedly Greek, but Hellenic influence is by no means the only historical factor which has led us to the use of snakes and wands in the symbolism of our profession.

1. THE CADUCEUS

The caduceus or *kerykeion* is a pair of snakes wound around a wand. It is no less than 5,000 years old. In the pre-anthropomorphic era, before it was used as the emblem of a god, it had been worshipped as the god himself. This caduceus-god had his origin in Bablyon and antedated by many centuries Hermes of the Greek pantheon with whom the caduceus is usually associated today. A Babylonian caduceus may be seen in the Louvre, ornamenting a green steatite vase found at Lagash and dedicated to the god Ningishzida.[2-3] No wings adorn it. As Garrison has pointed out in discussing the Babylonian caduceus, "for a number of reasons, principally as typifying the mysterious and changeable aspects of life itself the serpent was always symbolical of medicine in antiquity . . . to primitive man, the snake undoubtedly seemed the outward and visible sign of those potential energies which are summed up in the phrase, 'making medicine.' . . . not to apprehend this is to overlook one of the fundamental postulates of medical folk lore."[4] Elsewhere he has said, "In the light of such vast research as 'The Golden Bough' the functions of such a diety (Ningishzida and the caduceus) were indubitably medical; for even as medicine today touches every phase of human activity at one point or another, so in pre-

1. Tyson, S. L., *The Caduceus,* Science Monthly, Vol. 34, p. 492, 1932.

2. Frothingham, A. L., *Babylonian Origin of Hermes the Snake God, and Caduceus.* Am. Jour. Archael., Concord, 20: 175-211, 1916.

3. Garrison, F. H., *The Babylonian Caduceus.* Mil. Surg., 44: 633-6, 1919.

4. Garrison, F. H., *The Prehistory of the Caduceus.* J. Am. Med. Assoc., 72: 1483, 1919.

historic times a God, a king, a hero, a priest or a magician usually had medical functions among his other powers."[5] The Greeks borrowed the caduceus from the Babylonians. It has even been suggested that Hermes, the god of thieves, pilfered this honorable emblem from a much older civilization as he did the girdle of Venus and the trident of Neptune. Soon after the invention of printing medical publishers began to adorn their title pages with serpents. Sometimes there was a single serpent, just as often there were two,—frequently entwining a staff, sometimes adorned with wings, sometimes surmounted by a bird, sometimes in other conventional arrangements. Serpents used in these various ways appear upon the title pages of the works of Galen published in Paris in 1537, upon the works of Aetius published in Basil in 1542, on the works of Dioscorides published in Lyons in 1554. We have taken pains to examine no less than a dozen of these title pages. They occur in the Seventeenth as well as in the Sixteenth Century. About 1840 in England the Churchills, distinguished medical publishers, were using the caduceus on their title pages, and at least one American publisher prior to 1860 was employing a similar device. Sir William Butts, court physician to Henry VIII, employed the caduceus in his crest. Although he was the earliest of whom there is any record he was not the only physician so to employ it. Sir William Broadbent, Sir James Burrows, Sir Lauder Brunton, Sir Rickman Godlee and Lord Ilkeston were all physicians who adorned their coats of arms with the caduceus.

The caduceus has been widely used by medical organizations as well as by individuals. In 1856 it was placed upon the chevrons of the hospital stewards of the United States Army. In 1902 it became a part of the uniform of the medical officers of the United States Army.[6] It has long been the insignia of the United States Public Health Service. A French periodical of medical history adopted the title *Le Caducée*. It has been adopted by medical societies. It adorns the façades of many buildings dedicated to medicine today.

In 1919 there was some lively discussion in the medical press concerning the appropriateness of the caduceus as a medical emblem. It was stated that the wing-adorned wand of Hermes (Mercury) is more appropriately the emblem of commerce and trade than of medicine. It was pointed out that although our medical officers wear the caduceus, the staff and serpent of Aesculapius is worn by both the British and French Medical corps. The discussion served the purpose of bringing out the fact that the caduceus was much older than Greek mythology and that, in spite of argument to the contrary, it might very appropriately symbolize medicine. No less an authority than Fielding H. Garrison defended this thesis, and the medical department of the United States Army has not discarded the caduceus.

5. *Ibid. The Use of the Caduceus in the Insignia of the Army Medical Officer.* Bull. M. Library Asso., 9: 13-16, 1919.

6. McCulloch, C. C., Jr., *The Coat of Arms of the Medical Corps.* Mil. Surg., Vol. 41, 1917.

2. The Serpent-Entwined Rod of Aesculapius

Every nation has had its gods of medicine. Aesculapius was a Greek god of medicine. Imhotep was the Egyptian god of medicine. He was deified much earlier (3,000 B. C.), and since we have learned more about Egyptian medicine, there have been those who advocate dropping Aesculapius as the patron saint of medicine in favor of Imhotep. Aesculapius was not the only god among the Greeks who was appealed to in time of sickness. He divided this honor with Eileithyia and Aphrodite, with his two daughters, Hygeia and Panacea, with Morpheus, Somnos and Mors, as well as with his father Apollo. Apollo, god of music and poetry, was a very important god of medicine. He was sometimes called *Iatromantis* ("healer and seer"). He was also called Paeon from his use of the peony root as a medicine,—hence physicians are still known as the Sons of Paeon. He "expels disease, softens every pain," according to the poet Armstrong. Apollo was said to have been traveling in Arcadia one day when he encountered two serpents in mortal combat. He separated them with his olive staff. This staff entwined with two serpents thereafter became the emblem of Apollo and of peace,[7] and for those who prefer the caduceus as an emblem Apollo would seem to be the god of medicine. From Greek mythology we learn that Apollo had his son Aesculapius instructed in medicine by Chiron. Aesculapius who was destined to become the chief god of medicine in the Greek pantheon was deified at Athens about 430 B. C. It is said that as he sat one day in his tent, a serpent approached and entwined his staff, thereby designing, if somewhat unwittingly, another emblem of medicine. Aesculapius was worshipped in more than

7. Tobie, J. A., Hygeia, Vol. 8, p. 348, 1930.

200 temples dedicated to him, and statues of him in stone are to be seen today in many museums, in the Louvre, the Vatican, at Naples and at Athens, always with a single snake entwining his staff.[8-9-10]

3. SERPENTS, ONE OR TWO

The association of the serpent with medicine roots deep in the antiquity of the race. It was early venerated as the abode of the soul, then as the soul itself, and from the annual shedding of its skin came its symbolism of death and rebirth. It was the symbol of an earth cult which worshipped power in nature, power in healing and medicinal plants, and so it became the magic agent of healing about which there has always been mystery and unexplained power. For Cretans, Hindus, Egyptians, Indians, as well as many other peoples, the serpent possessed health-giving virtues. It was an essential part of the equipment of the Greek temple health resorts. During the "incubation," the ritual of dream manifestation, the serpents were said to crawl about between the cots of the supposed sleepers. They must have added tremendously to the effect of a therapy directed laregly toward the psychic.

The Greek healing temples, especially the famous one at Epidaurus, were ornamented with intertwined serpents.[11] Both Ovid and Livy tell us that in the pestilence of 291 B. C. Rome sent to Epidaurus for help and that the serpent dispatched to them brought the epidemic to an end. In commemoration of this the figure of a serpent in stone was placed on the banks of the Tiber, and here one can see it to this day. The worship of Apollo and of Aesculapius was closely linked, the temples of Aesculapius usually being placed upon the sites of healing springs or temples previously dedicated to Apollo, and serpent worship was a part of the ritual of both shrines.

It seems, therefore, that the serpent has been from time immemorial associated with the healing art. First in the Babylonian caduceus, then in the Greek and Roman caduceus, on the staff of Apollo, on the staff of Aesculapius, in the Greek temples, on the title pages of Sixteenth Century medical books, and on coats of arms of contemporaneous physicians, and now generally throughout the world. In some instances there have been two snakes, in others one. One snake entwining a staff represents the staff of Aesculapius. Two snakes about a staff, with or without wings attached, is properly a caduceus. But the use of one or more serpents, entwined or otherwise, seems to be highly appropriate to medicine. For balance and artistic effect two serpents may well be preferred and as such they do no violence to the most ancient medical tradition.

8. Medical Insignia, J. A. M. A., Vol. 99, p. 2117, 1932.
9. Hattie, W. H., Canadian M. A. J., Vol. 18, p. 79-80, 1928.
10. Zurik, K. G., Bull. Soc. Med. Hist., Chicago, April, 1928.
11. Wile, I. S., Annals Med. Hist., Vol. 8, p. 119. Cf. also Soginskey's Med. Symbolism, 1926.

Proceedings of Societies

The Danville-Pittsylvania Academy of Medicine

Held its regular quarterly meeting at the Memorial Hospital in Danville on November 12. Dr. E. H. Miller read a paper on Tumors and Dr. W. E. Dickerson, Dr. W. S. McMann, and Dr. F. H. McGovern, all of Danville, were elected to membership. Officers elected for the coming year are as follows: President, Dr. H. A. Wiseman; vice-presidents, Drs. E. B. Robertson and I. C. Harrison; and secretary-treasurer, Dr. P. W. Miles (re-elected). All are of Danville.

Arlington County Medical Society.

At the annual meeting of this Society held on December 19th, the following officers were elected for 1936: President, Dr. J. H. Walton, Cherrydale; vice-president, Dr. J. E. Payne, Clarendon; and secretary-treasurer, Dr. Robert H. Detwiler, Clarendon. Dr. John T. Hazel, who has been out of the State for some time, re-joined the Society. He is located at Clarendon, Va.

Lynchburg Academy of Medicine.

At the December meeting of this Society, held on the 2nd, Dr. J. Henry Rawlings was elected to the presidency, and Dr. John Wyatt Davis as vice-president. Both are of Lynchburg. As Dr. John Hundley, Jr., who has been secretary for sometime has declined re-election, the new secretary will be selected by the incoming Board of Trustees.

Dr. H. H. Hurt, of Lynchburg, presented an instructive paper on "Acute Abdominal Trauma."

Richmond Academy of Medicine.

Dr. J. M. T. Finney, Surgeon-in-Chief to Johns Hopkins University Hospital, addressed the regular meeting of the Academy on Tuesday evening, November 26, his subject being "The Role of the Imponderables in Surgery." He was accompanied by his two sons, Dr. J. M. T. Finney, Jr., and Dr. George G. Finney, both of whom gave talks also.

The Academy held its regular meeting on December 10, with Dr. F. P. Fletcher, president, in the chair. Dr. M. Pierce Rucker presented an interesting paper on "The History of Obstetrics in Virginia," supplemented by slides and an exhibit of some old books and instruments. This being the annual meeting, the report of the Nominating Committee was presented and the following elected officers for the coming year: President, Dr. Roshier W. Miller, and vice-presidents, Drs. Emory Hill and L. T. Stoneburner. The board of trustees and other officers will be named at the first meeting in January.

The usual buffet supper followed this meeting.

Norfolk County Medical Society.

At its meeting on December 2nd, Dr. Ross Garrett, Secretary of the Council of Social Agencies, Washington, D. C., was the invited guest speaker, his subject being Medical Economics, particularly as it concerns the plan recently adopted in Washington, which plan has been followed by several other cities for the care of the indigent sick. He spoke to a large audience comprising members of the Medical and Dental societies, and guests from various welfare organizations of the city. The Group Hospitalization plan has already been started in Norfolk, as explained elsewhere in this Department.

Dr. James W. Hunter and Dr. Lockburn B. Scott, both of Norfolk are president and secretary-treasurer, respectively, of this Society.

The Nottoway County Medical Society,

A component part of the Postgraduate Medical Society of Southern Virginia, held a very interesting meeting in Crewe, Va., on Wednesday night, December 4, with most of the physicians of the county attending, as well as a good number from the surrounding counties. The feature of the evening was a round table discussion of "Practical Points in the Diagnosis and Treatment of Abnormal Heart Conditions," which was led by Dr. Douglas G. Chapman of Richmond.

Dr. J. A. B. Lowry, Crewe, is president and Dr. J. A. Proffitt, Burkeville, secretary of this Society

Roanoke Academy of Medicine.

At the meeting of the Academy on December 2nd, held jointly with the Roanoke Dental Society, the following program was presented:

A discussion of the Relationship of Foci of Infection to Certain Types of Arthritis, Dr. H. H. Wescott, Roanoke; The Interrelationship of Dental Practice and General Medicine, Dr. John Bell Williams, Richmond; The Vitamins in Health and Disease, Dr. Chris P. Segard, of the Wisconsin Alumni Research Foundation; and The Practical Application by Our Knowledge of Vitamins to the Feeding of Children, Dr. Roger DuBose, Roanoke.

There was a large attendance at the meeting of the Academy on December 12th, including many visiting physicians.

Following a dinner, very interesting and instructive addresses were delivered by the invited guests, Dr. J. Tate Mason, Seattle, Wash., President of the American Medical Association, and Dr. Frank H. Lahey, Boston, Mass.

Virginia Peninsula Academy of Medicine.

Dr. Charles R. Austrian of the Johns Hopkins Medical School, Baltimore, addressed the Academy at its meeting on November 18, his subject being "The Differential Diagnosis of Pulmonary Tuberculosis." This was an excellent meeting with a good attendance of doctors from the Peninsula. Dr. E. L. Alexander, Newport News, is president, Dr. Robt. H. Wright, Phoebus, vice-president, and Dr. Frank S. Bacon, Hampton, secretary-treasurer.

Hanover County Medical Society.

At the meeting of this Society held in November, the following officers were elected: President, Dr. A. E. Murray, Beaver Dam; vice-president, Dr. J. Thomson Booth, Ashland; and secretary-treasurer, Dr. J. A. Wright, Doswell. Dr. Linwood Farley, Ashland, of the Hanover County Health Department, and Dr. J. H. Winfrey, Glen Allen, were elected to membership.

News Notes

A NEW YEAR WISH

A happy heart, a smiling face,
A sunbeam in the darkest place.
A road to travel that is free
From ruts, and smooth and fair to see.
A bright objective, that will seem
To realize your fondest dream.
This may the New Year hold for you—
—Selected.

New Chairman of Committee.

In the last issue of the MONTHLY, it was announced that Dr. Hugh H. Trout had been appointed chairman of the Health Division of the Virginia Conference of Social Work. As he was unable to accept this appointment, our President, Dr. P. St. L. Moncure announces that Dr. W. P. Jackson, Roanoke, Va., has accepted the chairmanship of this Committee.

Seaboard Medical Association of Virginia and North Carolina.

The annual meeting of this Association was held at Old Point Comfort, Va., December 3rd-5th, under the presidency of Dr. A. M. Burfoot, Fentress, Va. The attendance was large, there being a registration of 229, and altogether the meeting was considered one of the finest ever held.

The following officers were elected: President, Dr. Spencer P. Bass, Tarboro, N. C.; vice-presidents, Dr. Frank H. Redwood, Norfolk; Dr. Floyd P. Wooten, Kinston, N. C.; Dr. Robert H. Wright, Phoebus, and Dr. Marvin Mann, Moyock, N. C.; and secretary-treasurer, Dr. Clarence Porter Jones, Newport News. Dr. Jones has been secretary for a number of years but this time it was voted to combine the offices of secretary and treasurer. The next meeting will be held at Tarboro, N. C., December 1-3, 1936.

Virginia Doctors Honored.

At the recent meeting of the Southern Branch of the American Public Health Association, held in connection with the Southern Medical Association in St. Louis, Dr. I. C. Riggin, State Health Commissioner, was elected President, and Dr. G. F. McGinnes, State Epidemiologist, was re-elected secretary.

The Southern Surgical Association

Held its forty-eighth annual session at the Homestead, Hot Springs, Va., December 10, 11 and 12, with the president, Dr. R. L. Payne, Norfolk, Va., presiding. The attendance was next to the largest in the history of the organization and a splendid scientific program was presented. It was voted to hold the 1936 meeting in Biloxi, Miss., and the following officers were elected: President, Dr. Harvey B. Stone, Baltimore, Md.; vice-presidents, Dr. Fred W. Rankin, Lexington, Ky., and Dr. E. P. Lehman, University, Va.; secretary, Dr. Alton Ochsner, New Orleans. Dr. J. M. Emmett, Clifton Forge, and Dr. John S. Horsley, Jr., Richmond, were among those admitted to membership this year.

Admitted to American College of Surgeons.

The following Virginia doctors were admitted to fellowship in the American College of Surgeons at its meeting in San Francisco in the Fall: Dr. Albert A. Creecy, Newport News; Dr. Douglas S. Divers, Pulaski; Dr. Carson L. Fifer, Alexandria; and Dr. W. Carey Henderson, Nassawadox.

Dr. R. L Mason,

Roanoke, Va., has recently been appointed surgeon-in-chief to the Sons of Confederate Veterans. The appointment was made by and on the staff of W. Scott Hancock, Commander-in-chief, S. C. V., of St. Louis.

Dr. W. I. Prichard,

Formerly of Petersburg, Va., and recently in charge of the medical work of the Transient Camp at Fort Eustis, Va., is now making his headquarters at 1808 Monument Avenue, Richmond, Va., while engaged in other government work.

Dr. L. E. Hayes,

Formerly of Covington, Va., is now located in Shenandoah Life Building, Roanoke, Va., where he is engaged in the practice of dermatology and syphilology. He has recently completed a course in this work at the New York Postgraduate Medical School and Hospital.

The American College of Physicians

Will have its twentieth annual session in Detroit

with headquarters at the Book-Cadillac Hotel, March 2-6, 1936.

Dr. James Alex. Miller, of New York City, is President of the College, and has arranged a program of general scientific sessions of great interest to those engaged in the practice of Internal Medicine and associated specialties. Dr. Charles G. Jennings, of Detroit, is the General Chairman of the Session, and is in charge of the program of clinics and demonstrations in the hospitals, medical schools and other Detroit institutions. Dr. James D. Bruce, Vice-President in Charge of University Relations, University of Michigan, is Vice-Chairman of the Committee on Arrangements, and has in charge the preparation of an all-day program to be conducted at the University of Michigan on Wednesday, March 4th. Dr. Walter B. Cannon, Professor of Physiology at Harvard University Medical School, will deliver the annual Convocation Oration on "The Role of Emotion in Disease." Dr. Miller's presidential address will be on "The Changing Order in Medicine." About fifty eminent authorities will present papers at the general scientific sessions, while clinics and demonstrations will be conducted at the Harper, Receiving, Ford, Grace, Herman Kiefer and Children's Hospitals, of Detroit.

Dr. W. E. Dickerson,

An alumnus of the Medical College of Virginia, and formerly of Welch, W. Va., has located in Danville, Va., with offices at 802 Masonic Temple, where his practice is limited to diseases of the eye, ear, nose and throat.

Group Hospitalization in Norfolk.

A plan for group payment for hospital care has been launched in Norfolk and Portsmouth. Six hospitals in the two cities are supporting the plan, viz., St. Vincent's, Norfolk Protestant, Sarah Leigh and Memorial Hospitals in Norfolk, and the Parrish Memorial and King's Daughters Hospitals in Portsmouth.

An organization has been formed, known as the Tidewater Hospital Service Association. This association is incorporated under the laws of the State, and is authorized to enter into contracts with the hospitals and with groups of individuals. The Board of Directors is made up of a representative of each participating hospital, one from the Norfolk County Medical Society, the Director of the Norfolk Community Fund, and the Director of Public Welfare of the city of Norfolk. Four of the directors are practicing physicians, and two of the lay members have been closely associated with hospital administration for a number of years. The President of the Board is the representative of the Norfolk County Medical Society, Dr. Julian L. Rawls.

The plan worked out by the Tidewater Hospital Service Association follows in a general way the systems now operating in a number of cities. It provides a maximum of twenty-one days of hospital care in the wards of any of the participating hospitals, without any extra charges for anything that properly comes under the head of hospital service. If more expensive accommodations are desired, they can be secured by paying the difference between the ward rate and that for the class of accommodation desired.

The principle of a sharp line of clevage between hospital care and professional services has been adopted. The subscribers, of course, have a free choice of physicians, and may be accepted for hospital care only on the recommendation of such physician, and may remain in the hospital only while under his care. The attending physician must be acceptable to the staff of the particular hospital that the subscriber enters.

Subscription is limited to groups of five or more employed individuals. Groups of five to ten are required to subscribe 100 per cent. Groups of ten or more may secure the service if 60 per cent subscribe. The rate charged for the service varies from $8.00 to $10.00 per annum, payable quarterly in advance. Variation in the rate depends upon the size of the group and the percentage of a group that accepts the contracts.

While the plan has just been launched, a lively interest has already been shown by employed groups. It has not only been endorsed by the Norfolk County Medical Society, but more than 60 per cent of the members of the Society have subscribed. It is felt that the plan is economically sound and that the interests of our profession have been adequately safeguarded.

Medical College of Virginia News

A gift of 250 milligrams of radium with the most approved type of filters, applicators, etc., has been announced.

Work on the foundation of the new clinic and laboratory building is well under way. Bids on the

building proper will be requested about February 1st.

This new building will house outpatient clinics on the first four floors, one floor each will be given to bacteriology, biochemistry, and pathology; one-half floor each to physical therapy and preventive medicine, and perhaps the top floor to offices.

When the clinic and laboratory building is ready the department of anatomy will be given the full third floor of McGuire Hall.

Contracts have been let for the new laundry to be constructed on Thirteenth Street back of the Ruffner School. This is a P. W. A. project.

Miss Frances H. Zeigler, a member of the National Red Cross Committee, attended the annual meeting of this committee on December 10th, in Washington, D. C.

Dr. Roshier W. Miller was inducted into the Rho Chi Honor Pharmacy Society on December 3rd.

At the recent annual meeting of the Southern Medical Association in St. Louis, Dr. Isaac A. Bigger was made Chairman of the Surgical Section, and Dr. William B. Porter was made Chairman of the Medical Section, of the Association.

News From University of Virginia, Department of Medicine.

Dr. Sydney W. Britton, Professor of Physiology, has been given a grant of $15,000 by the Rockefeller Foundation for research on the adrenal glands. The grant has been made to cover a three-year research program.

A Postgraduate Course in Ophthalmology and Otolaryngology sponsored by the University of Virginia at the request of the Virginia Society of Otolaryngology and Ophthalmology was given during the week of December 2-7. Among those who gave lectures or held clinics were: Dr. C. C. Coleman, Professor of Neurological Surgery at the Medical College of Virginia, Richmond; Dr. Isador Friesner, Otologist, Mt. Sinai Hospital, New York City; Dr. E. Ross Faulkner, Surgeon Director, Manhattan Eye, Ear and Throat Hospital, New York City; Dr. Ferris Smith, Grand Rapids, Michigan; Dr. J. R. Page, Surgeon Director, Manhattan Eye, Ear and Throat Hospital, New York City; Dr. Bernard Samuels, Professor of Ophthalmology, Cornell University Medical College, New York City; Dr. E. B. Burchell, Eno Laboratory, New York Eye and Ear Infirmary; Dr. T. B. Holloway, Graduate School of Medicine, University of Pennsylvania; Dr. Albert Cowan, Graduate School of Medicine, University of Pennsylvania; Dr. Emory Hill, Professor of Ophthalmology, Medical College of Virginia, Richmond; Dr. C. S. O'Brien, Professor of Ophthalmology, State University of Iowa; Dr. Carl Speidel, Professor of Anatomy, University of Virginia; Dr. Fletcher D. Woodward, Professor of Otolaryngology, University of Virginia; and Dr. O. V. Batson, Professor of Anatomy, University of Pennsylvania. Thirty-eight doctors registered for the course.

The Sixteenth Postgraduate Clinic conducted by the University of Virginia Hospital in cooperation with the Department of Clinical and Medical Education of the Medical Society of Virginia was given on November 15th. Forty-four physicians were in attendance. At the morning session Dr. J. E. Wood gave a lecture on Pregnancy and Hypertension; Dr. V. W. Archer spoke on Present-Day Treatment of Malignant Disease; Dr. Staige D. Blackford spoke on Indigestion; and a Clinico-Pathological Conference was led by Dr. J. C. Flippin and Dr. James R. Cash. At the afternoon session a Surgical Clinic was held by Dr. Carrington Williams, of Richmond, Va. The program was concluded with Ward Rounds and a Round Table Discussion.

At the meeting of the University of Virginia Medical Society on November 25, Dr. H. E. Sigerist, of the Johns Hopkins University, gave a lecture on Primitive Medicine.

An E. R. Squibb Scientific Fellowship in Physiology with a stipend of $1800 has been awarded to Dr. Herbert Silvette, Instructor in the Department of Physiology.

The Committee in Aid of Displaced German Scholars has contributed the sum of $1000 toward the maintenance of Dr. Maximilian Ehrenstein, a research worker in the Department of Physiology.

At the meeting of the University Medical Society on December 2, Dr. O. V. Batson, Professor of

Anatomy at the University of Pennsylvania, gave a lecture on The Anatomy of the Head and Neck.

On December 9, Dr. Warren T. Vaughan, of Richmond, Va., spoke before the University Medical Society on the subject of Migraine.

Dr. James L. Hamner,

Mannboro, was recently elected chairman of the Democratic Committee of Amelia County.

News from New York Polyclinic Medical School and Hospital.

At a meeting of the Clinical Society of the New York Polyclinic Medical School and Hospital held in New York City, on November 4th, the following program was presented: "Contributory Causes of Coronary Thrombosis," by Cadis Phipps, M. D., of Tufts University, the discussion being opened by T. Stuart Hart, M. D., and Louis Gross, M. D.; and "Endothelial Tumors," by Dean Lewis, M. D., of Johns Hopkins University. The discussion on this was opened by Fred Waldorf Stewart, M. D., Nathan Chandler Foot, M. D., and David M. Bosworth, M. D.

At the December 2nd meeting, the two contributions were: "Changing Methods in Radiation Therapy in Malignant Diseases of the Uterus," by William P. Healy, M. D., of Memorial Hospital, the discussion on which was opened by Maurice Lenz, M. D., William Cameron, M. D., and Malcolm Campbell, M. D.; and "Surgery of the Pancreas," by Allen O. Whipple, M. D., of Presbyterian Hospital. This discussion was opened by William Barclay Parsons, M. D., Ralph Colp, M. D., and Edward L. Kellogg, M. D.

Dr. Russell L. Cecil gave an Afternoon Lecture on Wednesday, November 20th, on "The Types of Pneumonia."

Married.

Dr. L. Floyd Hobbs, Jewell Ridge, Va., and Miss Catherine Jones, Tazewell, Va., November 30.

Dr. Henry Bernard Showalter, Kenbridge, Va., and Miss Edna Elizabeth Kiely, Marion, Va., December 19.

Dr. Paul Douglas Camp, Richmond, Va., and Miss Nellie Cornelia Staves, Schenectady, N. Y., December 7.

Dr. William H. McCarty and Miss Sallie Cynthia Holmes, both of Marion, Va., November 26.

Dr. George Louis Jones, class of '34, Medical College of Virginia, who later interned at St. Luke's Hospital, Richmond, Va., and Miss Ruth Margaret Wilson, Richmond, December 14. Dr. and Mrs. Jones will make their home at Killarney, W. Va.

Dr. John Gordon Bell, class of '33, Medical College of Virginia, later interning at Johnston-Willis Hospital, Richmond, and Miss Anna Lee Paschall, Richmond, November 30. Dr. and Mrs. Bell will make their home in Hinton, W. Va.

Dr. Angus Hinson and Miss Johnie Lea Black of Chase City, Va., October 19. Dr. Hinson is a graduate of the University of Virginia, Department of Medicine, in the class of '31, and has since had a service at the New York Postgraduate Medical School and Hospital of New York City.

Dr. Rodolph Fowlkes, Welch, W. Va., and Miss Rinda Elizabeth Gay, Chatham, Va., December 11. Dr. Fowlkes is an alumnus of the Medical College of Virginia, class of 1932.

Dr. Fred P. Fletcher,

Richmond, Va., was elected one of the vice-presidents of the Richmond Council of Social Agencies, at its meeting on December 17. Dr. W. Brownley Foster and Dr. F. J. Wampler were elected as two of the members of the board of directors.

Dr. Walter E. Vest,

Former Virginian but for a number of years of Huntington, W. Va., was recently elected president of the Cabell County (W. Va.) Medical Society.

Dr. W. L. Griggs,

Of the class of '33, University of Maryland, is now engaged in general practice with the Benedict Coal Corporation at St. Charles, Va.

The Southeastern Surgical Congress

Will hold its Seventh Annual Assembly in New Orleans, March 9-10-11, 1936, at the Roosevelt Hotel. The following surgeons have already accepted places on the program: Dr. Arthur Hertzler, Halstead, Kan., Dr. Chevalier Jackson, Philadelphia, Pa., Dr. Francis E. Lejeune, New Orleans, La., Dr. Arthur W. Allen, Boston, Mass., Dr. John F. Erdmann, New York City, Dr. Jennings Litzenberg, Minneapolis, Minn., Dr. Joseph E. King, New York City, Dr. Fred Rankin, Lexington, Ky., Dr. C. C. Howard, Glasgow, Ky., Dr. George W. Crile, Cleveland, Ohio, Dr. Garnett W. Quillian, Atlanta, Ga., Dr. Paul Flothow, Seattle, Wash., Dr. Alan C.

Woods, Baltimore, Md., Dr. Virgil S. Counseller. Mayo Clinic, Dr. Alfred A. Strauss, Chicago, Ill., Dr. W. D. Haggard, Nashville, Tenn., Dr. Roger G. Doughty, Columbia, S. C., Dr. Thomas E. Cormody, Denver, Colo., Dr. Charles O. Bates, Greenville, S. C., Dr. Guy Caldwell, Shreveport, La., Dr. Gerry Holden, Jacksonville, Fla., Dr. Emmerich von Haam, New Orleans, La., Dr. Roger Anderson, Seattle, Wash., Dr. A. Street, Vicksburg, Miss., Dr. James S. McLester, Birmingham, Ala., Dr. Edgar Fincher, Jr., Atlanta, Ga.

Dr. Susan Wilson Field,

Of the State Teachers' College, Farmville, Va., spent the Christmas holidays in Florida.

Dr. John A. Wolfe,

Recently connected with the staff of the Western State Hospital at Staunton, Va., is now with the Southwestern State Hospital, at Marion, Va.

The American Board of Ophthalmology

Announces that its 1936 examinations will be held in Kansas City, Mo., May 11, at the time of the meeting of the American Medical Association, and the fall meeting is to be in New York City in October, at the time of the American Academy of Ophthalmology. All applications and case reports must be filed at least sixty days before date of examination. For information, syllabuses and application forms, write promptly to Dr. Thomas D. Allen, Assistant Secretary, 122 South Michigan Avenue, Chicago, Ill.

Dr. B. B. McCluer

Has returned to Powhatan, Va., for the winter months, after spending the summer at Rockbridge Baths, Va.

Dr. D. Hunter Marrow,

After spending the summer months and early fall at his home in Boydton, Va., has again gone to Florida and will be located for the winter at 217 Live Oak Ave., Daytona Beach.

Dr. Walter McMann,

Class of '30, Medical College of Virginia, later interning at Stuart Circle Hospital, Richmond, has located in Danville, Va., and is practicing obstetrics especially. He recently spent sometime in New York City, where he was resident in obstetrics at New York Polyclinic Hospital for two years.

Prize Offered for Essay on Goiter Problem.

The American Association for the Study of Goiter again offers the Van Meter Prize Award of $300 and two honorable mentions for the best essays submitted on the goiter problem. This award will be made at the discretion of the Society at its next annual meeting to be held in Chicago, Ill., on June 8, 9, and 10.

The competing manuscripts, which should not exceed 3,000 words in length, must be presented in English and a typewritten double spaced copy sent to the Corresponding Secretary, Dr. W. Blair Mosser, 133 Biddle Street, Kane, Pa., not later than March 1, 1936. Manuscripts received after this date will be held for competition the next year or returned at the author's request.

The Association will publish the manuscript receiving the prize award in their annual Proceedings, and reserve a place on the program of the annual meeting for presentation of the manuscript by the author,if it is possible for him to attend.

Dr. Beverley R. Tucker,

Richmond, Va., was elected first vice-president of the Seaboard Air Line Railway Surgeons at its recent meeting in Tampa, Fla. He was also one of the speakers on the program as were Dr. L. A. Law, Alberta, and S. R. Brittingham, Norfolk.

Hopewell to Have New Hospital.

Excavating for the John Randolph Hospital, Hopewell, Va., has been begun and completion of the project is set for the middle of May, 1936. The total cost will be about $30,000, and the hospital will house thirty beds and will contain more than $10,000 worth of equipment. Dr. T. E. Armstrong is chairman of the general hospital committee.

Colonial Medical Shop to be Restored.

Restoration of the medical shop of Dr. Corbin Griffin in Yorktown, Va., has been begun by the Colonial National Monument. Dr. Griffin practiced medicine in Yorktown in colonial days and was a member of the York County Committee of Safety during the American Revolution. The shop will be a colonial wooden building, a story and a half high, and when completed will be used for the Yorktown postoffice. It is being reconstructed also "as a memorial to the esteemed doctor."

Annual Report of the Central State Hospital, Petersburg, Va.

In the annual report of this Hospital, submitted by its superintendent, Dr. Hugh C. Henry, it is stated that the largest number of patients in its history were admitted during the past fiscal year. There were 620 first admissions and sixty-seven readmissions, making a grand total of 3,171 patients at the end of the year. This represents an overcrowding of 709. There were thirty-one sterilizations done, making a total of 470 since this was declared constitutional. The general health of the patients was good but there were 264 deaths, including one suicide from drowning.

The per capita cost of maintenance was only $142.87 while the per capita cost of maintenance in the New York State Hospitals, eighteen in number, averaged $344.77.

Dr. Berkeley H. Martin,

Richmond, Va., was recently appointed as county supervisor for the Tuckahoe District of Henrico County.

Dr. J. E. Tilman

Was recently elected president of the Powhatan Club, Powhatan, Va.

Dr. J. H. Smoot,

New Market, Va., was recently re-elected president of the Shenandoah County Fair Association.

Dr. R. L. Page,

Batesville, Va., has been elected as chaplain of the King Solomon's Lodge, No. 194, A. F. and A. M. of Yancey's Mill.

Alpha Kappa Kappa,

International medical fraternity is holding its biannual convention in Richmond, January 2th-4th, at the Jefferson Hotel. Dr. T. Latane Driscoll, Richmond, honorary grand vice-president, will act as toastmaster at the banquet to be held at that time.

Dr. Paul Q. Daniel,

Class of '33, Medical College of Virginia, is located at Big Rock, Va., where he is engaged in general practice.

The First International Conference on Fever Therapy

Will be held in New York City, September, 1936. The use of fever induced by physical and other agencies as a therapeutic procedure has received universal attention in the past few years. The conference will aim to collect and crystallize available data in this field. Therapeutic, physiological and pathological phases of fever will be discussed. While the suggestion for this conference originated with a group of interested European physicians, five national conferences have been held in the United States of America.

Further information concerning the conference may be obtained from the Secretary, Dr. William Bierman, 471 Park Avenue, New York City.

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Obituary Record

Dr. John Coleman Everett,

Prominent physician of Nelson County and a resident of Nellys Ford, Va., died December 4th after a short illness. He was seventy-three years of age and a native of Albemarle County. He received his medical training at the University of Virginia, and had practiced in Nelson County since the completion of his course. Dr. Everett was active in county affairs, having served in the House of Delegates of Virginia; he was at one time a member of the State Board of Health, and had been a member of the Medical Society of Virginia for a number of years. His wife and four children survive him.

The following resolution was adopted by the Nelson County Medical Society at its meeting December 16, 1935:

As members of The Nelson County Medical Society we deeply feel the absence of Dr. J. C. Everett, and with sorrow realize our loss.

Dr. Everett passed from us December 4, 1935. For fifty years he was a practicing physician in Nelson County. Originally from Belmont, Albemarle County, he studied medicine at the University of Virginia. He entered the practice of medicine when hospital facilities were difficult to obtain, so the earlier period of his practice covered surgery, in which he obtained excellent results under the most difficult circumstances. Intensely interested in his profession, active and vigorous in mind and body with the keenest insight into human nature, he

became an exceedingly useful and leading man in the practice of medicine.

Dr. Everett covered a wide field of practice and made strong friends among his patients, who greatly respected his practical knowledge and ability to adjust himself to existing conditions.

True and loyal as a friend, he was a tower of strength in time of trouble. As a citizen there are few that attain his standing; one greatly interested in public affairs, health (as he served for many years on the local board of health, with marked efficiency), politics and local government also engrossed his attention.

Being a rare character of aggressive thought, action and vigor, possessed with marked originality and magnetic personality, we feel at his ripe age of seventy-three years the force of his life is indelibly written upon the hearts and lives of our citizens, and as the great mountains that overlook the spot of his last resting place, we believe that his memory will stand through time for good citizenship and as a source of encouragement for others to overcome difficulties in the path of duty.

DR. F. M. HORSLEY,
DR. J. F. THAXTON,
DR. E. C. KIDD,
Committee.

Dr. Charles Shepherd Webb,

Prominent physician of Bowling Green, Va., died November 28th, after a brief illness. He was eighty-nine years of age and received his medical degree from the former New York University Medical College in 1875. Dr. Webb was regarded as the foremost citizen of Caroline County where he had been a leader in civic, church, medical and political activities. He had served as Mayor of Bowling Green for several terms and had practiced his profession in that town for nearly sixty years. He is survived by his wife and four children.

Dr. Robert L. Kern,

Richmond, Va., died on December 24th, after a short illness, though his health had not been good for several years. He was a native of Clarke County, Virginia, and sixty-four years of age. He studied medicine at the former University College of Medicine in Richmond, Va., in 1899, and had practiced in Richmond for more than thirty years. Dr. Kern was a Mason and also a member of the Scottish Rite. He had been a member of the Medical Society of Virginia since shortly after his graduation. He is survived by his wife and a daughter.

Dr. John Arnold Board,

Well-known physician of Altavista, Va., and son of Dr. J. J. Board, also of that town, died suddenly December 18th. He had gone for a short hunting trip and when he did not return, a searching party found him killed, apparently by a charge from his own gun. He was forty-four years of age and graduated from the Medical College of Virginia in 1913. He had served overseas during the World War and had practiced in Altavista for the past sixteen years. Dr. Board had been a member of the Medical Society of Virginia for fourteen years. His wife and a son survive him.

Dr. Henry B. Pack,

Blacksburg, Va., died December 2nd. He was fifty-seven years of age and a graduate of the College of Physicians and Surgeons, Baltimore, in 1905. His wife and two children survive him.

Dr. William P. Parrish,

Chatham, Va., died suddenly December 6th, after having been in ill health for the past two years. He was sixty-nine years of age and graduated from the former Baltimore Medical College in 1891. Dr. Parrish was for a number of years Mayor of Chatham and was credited with a large part in the development of the town. He had been a member of the Medical Society of Virginia for thirty-seven years. Two children survive him.

Dr. Edward Starr Judd,

Renowned surgeon of Rochester, Minn., died of pneumonia on November 30, in Chicago, where he stopped over on account of a cold when on his way for a visit in the East. He was president of the American Medical Association in 1931-32, and had been the recipient of many other honors.

Dr. Edward Chisholm Cobb,

Well-known Caroline County physician, died suddenly at his home in Ruther Glen, Va., December 14th. He was fifty-nine years of age and a graduate of the former University College of Medicine, Richmond, in 1899. Dr. Cobb had practiced for nearly forty years at Ruther Glen. He was a Mason, a member of Acca Temple Shrine, and of the Scottish Rite. Dr. Cobb had been a member of the Medical Society of Virginia for thirty-six years. His wife, four sons and a daughter survive him.

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SYMPOSIUM ON THERAPY

TREATMENT OF ACUTE RESPIRATORY DISEASES.*

F. C. Rinker, M. D.,
Norfolk, Va.

The scope of this subject is so large it will be necessary to condense discussion of the various methods of treatment into a brief outline in order to complete it in the allotted time.

For convenience the acute diseases of the respiratory tract may be divided into two main groups: *First:* Acute infections affecting the upper respiratory tract, and *Second:* Diseases of the bronchi, lungs and pleura.

The upper respiratory tract affections may be divided into: First, Diseases of the nose and accessory sinuses; Second, Diseases of the pharynx, and Third, Diseases of the larynx and trachea.

Because of the close proximity of these open avenues of infection, the writer has chosen to discuss this division of the subject under the caption of the common "cold," so-called influenza or la grippe.

Probably the most frequent of human ills are infections in the upper air passages. The common "cold" is always with us and, while it may be considered a minor ailment, it should not be taken lightly, since it is usually the forerunner of more serious conditions, such as sinusitis, bronchitis, pneumonia, pleurisy and diseases of the cardiovascular and urinary systems.

Osler, in his Practice of Medicine, wrote: "Acute catarrhal inflammation of the upper air passages popularly known as colds or catarrh is usually an independent affection but may precede the development of another disease."

There are unfortunately no specific drugs or methods applicable to the treatment of the common cold but an early appreciation of the symptoms, namely, congestion of the nose and throat, pain in the head and eye balls, aching in the muscles generally but particularly in the back muscles, chilly sensations and fever with malaise, will oftentimes prove life saving provided treatment is instituted early.

The patient should be put to bed and kept in bed until he has been free from fever for from two to four days. Rest not only tends to reduce the severity of the infection and attendant symptoms but lessens the chances of complications and reduces the length of incapacity.

Fresh air is important because it assists in reducing the congestion of the infected mucous membrane surfaces. Undue chilling should, of course, be guarded against.

Tepid alcohol rubs or sponges are helpful in that they promote skin activity and stimulate the circulation.

The *diet* should consist of easily digestible foods of a nourishing quality and high in carbohydrates.

Fluids are given freely, thus aiding in the excretion of waste products and assisting in the prevention of dehydration.

At the onset it is wise to administer a purgative, such as castor oil or a saline, but the constant use of purgation is unwise.

A hot drink is often helpful because it will cause sweating and thereby aid in reducing toxemia.

Drugs—There have been many preparations advised in various doses and combinations. The antipyretics are most extensively used, such as acetanilid, acetphenetidin, antipyrene and others. When these are given in large or continued doses they are apt

*Read as part of a Symposium on Therapy before the sixty-sixth annual session of the Medical Society of Virginia, at Norfolk, October 15-17, 1935.

to cause depression and hence it seems wise to administer them in small doses, preferably in combination with some stimulant such as caffeine or strychnine. The salicylates have been found to be of particular value in the hands of a majority of writers. Opium or some of its derivatives in combination with the salicylates is used extensively. Deihl, in an exhaustive study of colds among the students of the University of Minnesota in 1933, stated: "It seems quite definite from the results of this study that opium and its alkaloids are of distinct value in the treatment of coryza." The chief result observed, in this report, was a marked or complete early disappearance of nasal congestion and discharge and a lessening of toxic signs and symptoms. The writer prefers a combination of Dover's powder, caffeine and acetylsalicylic acid in small amounts given at frequent intervals.

Headache is a troublesome symptom for which codeine seems to be the most useful drug.

Coryza, when not relieved by the preparations mentioned above, will at times respond to the use of belladonna, quinine and camphor-monobromate given in combination in small amounts. At times, however, the nasal passages will require the use of cocaine, epinephrin or other vaso-constrictors, administered locally either by spray or nasal applications.

Cough is a symptom almost universally accompanying the condition and as a rule will respond to some elixir containing codeine or heroin in combination with ammonium chloride if the cough is non-productive. It must not be overlooked that severe cough often is caused by congestion or infection of the maxillary sinuses associated with the common cold, and local treatment or surgical intervention may be called for.

Gastro-intestinal symptoms, such as nausea, vomiting and diarrhea with abdominal cramps occur at times. These are relieved usually by abstinence from food for a few hours and the administration of paregoric or spirits of chloroform with bismuth and, if fluids are required, glucose and saline, or Ringer's solution may be given intravenously.

Restlessness and insomnia caused by the toxemia and nasal congestion can be relieved by the bromides or barbiturates.

If there are evidences of circulatory weakening, digitalis, coramine, caffeine or adrenalin should be employed according to the acuteness or seriousness of the cardiac state.

Should anoxemia occur, the oxygen tent has proven of inestimable value.

There is a tendency on the part of many to administer alkalies in large doses to patients suffering infections of the upper respiratory tract. While this procedure may be of considerable aid in the majority of cases because acute infections are often accompanied by acidosis, it should be borne in mind that the utilization of such preparations can be overdone and that alkalosis is just as damaging to body tissues as is acidosis.

Vaccines and sera have been tried and advocated by a great many clinicians but the writer believes the use of foreign proteins, such as omnadin, neolacmenase, or the various forms of milk preparations given intramuscularly early in the disease, are of greater value in assisting body resistance.

Complications of the common cold or influenza occurring in the upper respiratory tract are most frequently located in the nasal accessory sinuses and throat and should best be treated by the rhinolaryngologist by local applications or by surgical means.

The second portion of this discussion will now deal with the bronchi, lungs and pleura.

Acute bronchitis is usually associated with or caused by infections in the upper air tract or mouth and hence the general treatment is the same as that advised under treatment of the common cold. Among the drugs most frequently employed for the inflammation in the bronchial tree are tincture of benzoin inhalations with steam. Creosote is extensively employed because it is eliminated through the bronchial mucosa and is supposed to have a soothing effect as well as a mild antiseptic action on the infection, but it often upsets the stomach and therefore is not applicable in all cases. Belladonna, especially when used in combination with phenobarbital, has been found to be efficacious. Codeine, heroin or morphine often are required to quiet the cough, and, of course, local care of the nose, throat and mouth is advised.

There is one particular form of bronchial infection requiring specific treatment known as bronchospirochetosis which is caused by the Vincent's organism, first described by Castellani in 1906. The specific drugs advised in this condition are the arsenicals or tartar emetic given intravenously, or

fuadin (a preparation of antimony) given intramuscularly. It is needless to state that the mouth should be carefully treated by a dentist since the infection most always originates about the gingival margins.

The general treatment of pneumonia is the same for both types (lobar and bronchial) with few exceptions, which will be noted in the discussion.

Pneumonia should be treated as an infectious disease of severe character with a view of preventing spread of the infection to other parts of the body and safeguarding vital organs such as the cardiovascular system, the urinary system and the central nervous system.

The patient should be kept in bed and protected physically and mentally as completely as possible. The senile patient may be more comfortable in a semi-upright position. Visitors should not be allowed. The routine care is not different from that suggested for the common cold and therefore will not be discussed further.

It is the writer's opinion that all adult cases should be digitalized early in the disease in order to protect the heart which is laboring under the stress of toxemia and increased work. Morphine is of inestimable value in those cases who are restless or suffering from pain or cough.

The alcoholic beverages are useful in cases of restlessness and under-nourishment, and the chronic alcoholic.

At times the blood chlorides are found to be low. When practicable they should be determined and if found deficient sodium chloride given intravenously is often a life saver.

If dehydration occurs the administration of glucose with normal saline or Ringer's solution is advised.

In 1930, Henderson, Haggard, Coryllos, Birnbaum and others conceived the idea that the pneumonia patient would be improved if the air passages were kept open and drainage promoted by deep breathing. To this end they advised the inhalation of 5 to 7 per cent carbon dioxid with oxygen or air with good results.

For cyanosis, especially complicating the bronchial type, oxygen given under a tent, administered preferably in the early stages, has been used with excellent results.

Specific serum therapy is applicable in cases of lobar pneumonias of types I and II. The use of antiserum began with the studies of Neufeld and Handel in 1909, when they concluded that the sera of animals immunized with the pneumococcus were capable of passively protecting other animals.

In 1917 Cole and his associates reported 10 per cent mortality in 371 type I cases treated with the antiserum. Since that time clinicians have used antiserum in the treatment of the pneumonias types I and II with encouraging results. Unfortunately, however, about one-third of the cases of lobar pneumonia are caused by either pneumococcus type III for which there is no specific serum or one or more of the infectious organisms having an elective affinity for lung tissue. Therefore, the use of specific sera should be employed only in those cases where typing of the offending organism has been defintely determined.

Artificial pneumothorax has recently been advocated by some writers and condemned by others in the treatment of lobar pneumonia. Leopold and Lieberman, after an analysis of 197 cases treated by themselves and other investigators, report a mortality of 29.4 per cent treated by this method. (At this point is seems advisable to recall that the average mortality rate of lobar pneumonia is from 25 to 35 per cent). These investigators conclude that artificial pneumothorax is of distinct value when used in the first three days of the disease. They also recommend its use in adults only, and coincident with all other appropriate measures. Stoll, Hopkins and Martin advocate the use of pneumothorax in those cases for which there is no specific serum. From a digest of the literature it would seem that the method of artificial pneumothorax is still in its infancy and that diagnosis by X-ray studies should be made before its utilization because it would be damaging to collapse one side of the chest if there were existing disease on the opposite side.

Inflammation of the pleura may occur as a complication of pneumonia or independent of lung affections. It may be fibrinous, serofibrinous or there may be pus in the pleural cavity, which is known as empyema. In all cases the patient should be put to bed and given the routine care advised for any acute respiratory disease. Fixation of the chest by strapping is advisable and assists in relieving pain. The serofibrinous type is treated by removing the fluid from the pleural cavity by thoracentesis followed by fixation of the affected chest. The writer

has not used artificial pneumothorax in these cases, but it occurs to him that the injection of air into the pleural cavity of these patients, after the withdrawal of fluid, might tend to prevent adhesions and relieve pain.

Empyema should be treated by surgical methods and the patient supported and protected as in all severe infections of the respiratory tract.

There are other methods of therapy, such as diathermy, in the treatment of pneumonia, and intertracheal injection of lipiodol and other drugs advocated in the treatment of bronchial affections, but their uses are limited and time does not permit of a full discussion of these methods.

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TREATMENT OF ACUTE INFECTIONS OF THE UPPER URINARY TRACT.*

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The spirit of this symposium, as related to the upper urinary tract, is to introduce a discussion of those measures which may be employed by the general practitioner in combating acute infection without the instrumental and other aids which lie at the hand of the specialist.

The assignment is not easy. Manifestation of bacterial invasion in this area may be associated with direct pathological processes, varying widely in extent and gravity, and not infrequently accessory factors of serious surgical import also lie concealed behind the clinical pictures of so-called pyelitis. Without elaborate diagnostic machinery not readily at the disposal of the general practitioner—and sometimes with it—it may be quite impossible to visualize the actual condition present and yet such visualization is highly important in many instances. Given two cases presenting almost identical degrees of fever, pain, vesical disturbance and pyuria and one may resolve itself into a simple transient infection which will yield to almost any treatment or even no treatment, whereas the other will become increasingly, perhaps desperately, ill because of widespread distribution of infection due to static urine resulting from calculus or some other cause. The measures applicable to the former will obviously not be appropriate to the latter—and yet for an appreciable and perhaps significant period of time there may be no means of differentiating between them. This disturbing thought is but one of many, some of them highly complex, which arise in the presence of acute infection of the upper urinary tract; and when to this is added a considerable divergence of opinion regarding treatment, even in the presence of well-established diagnosis, the difficulties of the writer will be understandable and his hesitancy excusable.

For practical purposes it seems desirable to postulate a case which though it cannot without complete urologic study be so described unqualifiedly yet actually exists in vasts numbers, namely simple uncomplicated acute infection of the renal pelvis and renal parenchyma, commonly known as pyelitis or pyelo-nephritis. Upon occasions even these will require more than general medical management and it will be necessary to refer again to this fact. On the other hand, many or most of them will yield to procedures that may be readily administered by the general practitioner and a consideration of these procedures is the immediate purpose of this paper.

Rest in bed is essential and might be taken for granted if I had not encountered febrile patients with acute pylitis paying regular visits to offices for

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prescriptions and instructions. Pain and general discomfort attending this condition may be considerable and call for relief by means of mild sedatives or opiates if necessary. Diet should be bland and yet should not be restricted to the point often observed. Fever does not require starvation of the patient and especially is this true in renal infection. It is important to keep these cases well nourished and it is my own habit to feed them liberally. The appetite may be regarded as a quite safe guide.

Attention to the bowels is of particular importance not merely for the purpose of ordinary elimination but because the intestinal tract is often the primary focus of a renal invasion. Generally speaking, cathartics are avoided, but a daily enema, or colonic irrigation, becomes a fixed part of the therapeutic program. Alteration of the intestinal flora by means of the bacillus acidophilus is highly recommended by some but I have not received sufficient encouragement to continue its use.

Drugs by mouth may as well be reduced to the minimum required by symptoms. Much has been written of urinary antiseptics and it is probable that the profession, including the expert urologist, will continue under the spell of the high-pressure salesmen. For my part, I have long ago discarded the steadily recurring and always expensive new preparations. If one is disposed to use antiseptics at all—and they may be of some real value at the level of the bladder—none will be found superior to the familiar hexamethylenamine or urotropin provided a reasonable degree of urinary acidity is coincidently maintained. The possibility of employing this drug intravenously should be borne in mind; also that it is quite irrational to use an antiseptic and dilute it with so large a fluid intake that its bactericidal value, highly questionable at best, becomes totally imaginary. During the antiseptic stage of medication fluids should be restricted to actual needs.

As between the two the fluid will be found far preferable and, in fact, here one approaches a major consideration in the management of urinary infections. By one means or another the tide of urine should be kept at a high and steady level, as thus not only is toxemia combated but an actual bland irrigation of the whole urinary system is established. If the patient is not nauseated there is no better way of accomplishing this than by the oral administration of water. If this avenue fails, one may resort to hypodermoclysis or venaclysis. It is quite possible, however, to over-do the latter with perhaps serious consequence. I feel quite safe and satisfied with the subcutaneous administration of several thousand cubic centimeters of fluid a day stimulated by the preliminary or concurrent intravenuous use of 50 c.c. of 50 per cent glucose, one or more times. This concentrated glucose not only has great nutrient value but it creates tissue thirst, strikingly promoting the free absorption of fluid from the subcutaneous area.

Alkalinization of this irrigating flood may be undertaken at intervals but it need not be expected to accomplish more than possible promotion of liberal fluid intake and some amelioration of local distress in bladders particularly sensitive to acidity. The ancient custom of "disconcerting" the organism by alteration of reaction within the narrow range encompassed by the usual line of medication has little or no basis in fact. It has been thoroughly demonstrated that even under extreme therapeutic pressure the body will not produce urine of a degree of alkalinity sufficient to inhibit bacterial growth. It is much more rational, and, in fact, of genuine consequence, to direct one's energies toward the opposite end of the scale, for, whereas the system may fail of effective alkalinization, it is quite capable, under proper stimulation, of often developing acidity so intense as to prove decidedly inimical to certain bacteria. Though Clark questions this, the weight of evidence is emphatically to the contrary and even he appears to admit a certain degree of inhibition. Acidity of the urine may be influenced by the diet. Among the most effective drugs are ammonium chloride and ammonium nitrate. I am more accustomed to the former, using enteric-coated tablets up to ten grams daily, if necessary. This line of attack may appropriately be combined with the urotropin phase and it will enter very conspicuously into the ketogenic regimen presently to be considerd. Not a few cases will be found peculiarly stubborn and in some it will be quite impossible to effect the required acidity which must reach a point indicated by a pH of 5.2 or under. The general practitioner can readily determine this by adding one drop of 0.04 per cent of chlorphenol to twenty drops of the urine; at pH 5.2 the color of the urine is unchanged; a faint pink color indicates a pH of 5.5 to 5.8 Recently under the caption, "A New Acid Medication

in the Treatment of Bacilluria," Crance has offered the use of concentrated nitrohydrochloric acid in ten-drop doses as a means of quick acidification of the urine. I have found it less effective than the dilute acid though the latter must be used in conjunction with the other drugs named. Crance was also evidently not aware of the fact that Keyser, of Roanoke, a member of this Society, has for sometime been using the concentrated acid and has it listed in his admirable folder summarizing measures to prevent the recurrence of urinary calculi.

Under the relatively simple procedures described up to this point, many cases of uncomplicated acute infection of the urinary tract will promptly subside. In a certain percentage of instances, however, this happy outcome will not appear and the patient after some days of this treatment will remain quite ill. It becomes imperative then to find some other means of combating the infection, short of the instrumental attack, which will now be suggesting itself to the average urologist. Vaccines and the bacteriophage have a few ardent advocates and they may have more virtue than my own experience with them leads me to believe. Much more may be expected of two other possibilities and these, I am convinced, are entitled to weighty consideration, namely the ketogenic diet and the intravenous use of certain drugs, especially mercurochrome. Here I approach debatable and even dangerous ground, but we may as well get into it.

From time to time various preparations—neoarsphenamine, mercurochrome, acriflavine, metaphen, gentian-violet, bichloride of mercury and typhoid vaccine—have been proposed for intravenous use but I shall limit my comment to two. Neoarsphenamine in small (0.3 gm.) doses at four or five-day intervals may be found to have a definitely beneficial effect in the coccal infections. When the much more common colon bacillus is the offender, something else becomes necessary. I have found nothing equal to mercurochrome; in fact, whatever the type of infection, this drug in acute cases may be employed with the expectation of a large percentage of good results, and I unhesitatingly adopt it in any case where the above described simpler measures have failed and where I am satisfied that no stasis of urine or other complicating factor is present. It is no more invariable in its behavior than anything else of value in medicine but its virtue is so often striking that I have been won from an original position of antagonism to one of whole-hearted endorsement. I realize fully that the proposal of this next step in the treatment of stubborn acute urinary infection will be anything but popular. Yet I feel a sense of obligation in submitting it with the utmost deliberation. The drug acts, if at all, not by direct destruction of bacteria in the circulation but by the stimulation of tissue re-actions. This being true, it seems irrational to avoid the clinical manifestation of such re-action by dilution or other maneuvers so frequently recommended. My own technique varies sharply from that employed by most of the few others still using the red dye. The total dosage is moderate—somewhat above 2.5 milligrams per kilo of body weight—but this is administered in a concentrated 1 per cent solution with the definite hope that it will be promptly followed by a sharp re-action manifested by further elevation of temperature and perhaps a chill. The cases which respond best are those which have an unequivocal re-action of this sort. For a few hours the patient may be rather miserable but he is rapidly compensated by the dramatic change in his general status which often ensues. Usually a single dose is sufficient to turn the tide; if not, it may be repeated, but it will be well not to do this under four days on account of irritation of the intestinal tract and perhaps other sequelae. Extreme debilitation, advanced cardiac disease, and profound depression of renal function are the only contraindications of which I am aware. Fearfully, but emphatically, I commend this procedure to the general practitioner and with the further thought that if he gets no particular result in his first essay he try again sometime. My comment is based upon the observation of perhaps a hundred cases of one sort and another. A special intravenous ampule of the scales dissolved in 50 c.c. of distilled water will make a 1 per cent solution. The weight of the patient divided by the factor 8.8 will give the number of cubic centimeters of this solution sufficient to provide 2.5 mg. per kilo—a short-cut calculation for which I am indebted to one of my residents.

There remains for consideration the ketogenic diet, the most recent addition to our armamentarium but one destined, I believe, to play a very important role in the future. The limitations of the present discussion do not permit a comprehensive review of this extremely interesting and significant experiment.

The essential principle of this procedure is the administration of a diet so low in carbohydrates and so rich in fats that normal fat combustion is impossible and the urine accumulates intermediate ketone bodies at least one of which—beta-oxybutyric acid—is inhibitory to the life of certain organisms, and especially if it is associated with a concentration of general acidity in the urine. The limit at which this action occurs appears (Helmholz) to be 0.5 per cent of beta-oxybutyric acid and a pH of below 5.5—simple tests for both of which are available. Whether either of these principles is effective without the other is debatable—certainly the efficiency of their conjunction is being increasingly demonstrated. It is also questionable whether the effect of the ketosis is bacteriostatic (Anson Clark) or bactericidal (Helmholz *et al*). Furthermore, there is divergence of opinion with regard to the vulnerability of bacteria. The bacillary forms are admittedly much more readily brought under control and of these the Escherichia coli is quite susceptible and the aerobacter aerogenes decidedly resistent. This is fortunate since the common urinary infection is of bacillary origin and the Escherichia present is about 75 per cent of instances. The general practitioner may be content with a simple slide showing bacilli and not attempt a differentiation between the two groups, though this would give him some clue as to what to expect in terms of results. If he should be so inclined, the inoculation of a culture tube containing saccharose will establish the differentation, the Aerobacter producing gas within forty-eight hours and the Escherichia not. With infection of the coccal type, the diet, according to Helmholz, will be definitely beneficial but, according to Braasch and others, will have little or no effect. Here the neoarsphenamine therapy may prove of considerable avail.

Until comparatively recently the administration of the ketogenic diet was so complicated and difficult that it could be accomplished only in a hospital and and then often but indifferently well. As a result, its use was severely restricted. Now Clark and Keltz have performed a notable service in developing a simplified ketogenic treatment applicable to office practice. Strict attention to detail, including recognition and proper treatment of possible excessive acidosis, is still necessary but Clark's new formula is well within the range of any physician. In fact, the diet may, if circumstances require, be reduced to such simple terms as six eggs and one and one-half pints of cream (40 per cent fat) per day. Clark's very practical article, containing menus, simple tests, and reference to necessary accompanying therapeutic measures appeared in the *Journal of the American Medical Association* of January 26, 1935, and should be readily available to all members of this Society.

By means of one or more, or all, of the procedures outlined above, the general practitioner will bring the great majority of cases of simple uncomplicated infection of the upper urinary tract to a satisfactory clinical conclusion. His full duty is not yet discharged, however. Clinical cure may be insufficient. Germs may still lurk in the urine, now dormant but quite capable of producing later recurrences with steadily increasing difficulty of eradication. Treatment should not be stopped until the slide on several tests is free of pus and bacteria, and if in some cases instrumental measures are necessary to accomplish this, they should be unhesitatingly sought. Too often, even the expert urologist stops short of this point and lives to regret it later.

The general practitioner will also recall that urinary tract infections are, as a rule, secondary to foci situated elsewhere in the body and that it is idle to expect consistent permanent results without the elimination of these. I have not had the courage, as advised by some, to approach these foci in a patient acutely ill with pyelitis. But as soon as the situation has been brought under adequate control and the patient is in condition to endure attack upon the focus this should be instituted—and with thoroughness. A variety of sites will have to be scrutinized, especially the teeth, tonsils, sinuses, intestinal tract, prostate gland, cervix uteri, and gall-bladder.

Finally, one is led to conclude with the warning expressed at the outset, namely, that what may appear to be a case of simple uncomplicated acute infection of the upper urinary tract may be, in fact, something quite different. The general practitioner, therefore, will not persist too long in this conservative management in a certain minority of cases which remain seriously ill in spite of everything he has done; otherwise sepsis from carbuncle, cortical abscess, perinephritic abscess, or focal suppurative nephritis may become overwhelming; or extensive renal destruction may occur from calculus obstruction or from static urine of some other origin. Any such

rebellious case had better be sent on to a hospital where it may have the benefit of X-ray examinations, more comprehensive laboratory study, cystoscopic exploration and treatment. or even surgical intervention. Furthermore, even when the case comes to happy state of resolution with reference to a given attack, the possibility of some complicating factor should be entertained and if the ultimate picture is not completely satisfying to the general practitioner, he should insist upon a final test to dispose of this doubt. Should he not care to go to the length of a cystoscopy for this purpose, an X-ray plate and especially an intravenous urogram will be of immense value—at least by reassurance, at most by disclosure of some condition which, unless remedied, leaves the unsuspecting patient doomed to another and perhaps more dangerous outburst.

SUMMARY

Acute uncomplicated infection of the upper urinary tract is primarily the affair of the general practitioner and in a majority of instances will be brought under control and final complete cure by measures well within his range of administration, and furthermore with a measurable degree of scientific precision by the application of a few simple office tests. Short of the instrumental procedures which appeal to the average urologist, the therapeutic steps which appear most efficient in this condition are (a) rest and relief of pain, (b) bland, but liberal diet, (c) daily enemas or colonic irrigations, (d) systematic forcing of fluids by various means, (e) acidification of the urine to a high degree if possible, (f) intravenous medication, especially mercurochrome, (g) the ketogenic diet. The last two will be adopted only after the simpler measures have failed. Antiseptics by mouth will play an insignificant role and if any are used urotropin will be as efficient as any and much less expensive than most of them. All cases should be followed until the urine is free of pus and bacteria and until demonstrable foci have been eradicated. In any case resisting this conservative treatment, a surgical grade of infection or a calculus or other complication should be suspected and the patient should be hospitalized promptly.

THE TREATMENT OF THE TOXEMIAS OF PREGNANCY.*

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In the present discussion by the term "toxemias of pregnancy" we refer to those pregnancies associated with hypertension, albuminuria, edema, headache, visual disturbances and occasionally convulsions. This general group of disorders seems to include conditions in which the underlying pathological processes may differ. In a certain percentage there is definite evidence of renal disease, usually spoken of as chronic nephritis with pregnancy, while in the remainder renal insufficiency seems to play at most only a temporary role.

CHRONIC NEPHRITIS WITH PREGNANCY

Although chronic nephritis complicating pregnancy is not a true "toxemia," the signs and symptoms are so similar to those of toxemia that it is customary to consider them together. The nephritis may have existed before, or may first make its appearance during the pregnancy. The manifestations often appear early in pregnancy; the more advanced the nephritis the earlier they appear. Renal insufficiency becomes more pronounced during pregnancy and increases as the pregnancy advances. There seems to be something connected with pregnancy which exacerbates the nephritic process and leaves the patient in increasingly worse condition after each gestation. Pregnancy is perhaps one of the most sensitive tests of kidney function, as it may reveal instances of diminished function, undetected by present clinical or laboratory tests. If the individual survives the gestation, the amount of renal damage is almost certain to be greater afterwards, so that there is justification for the assumption that pregnancy occurring in individuals with chronic nephritis definitely shortens the life expect-

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ancy. In addition, the outlook for the child is poor as placental changes affect its nutrition and development, often leading to intra-uterine death and prematurity. The salvage in children is hardly sufficient to warrant the risk to the mother.

In view of these considerations, the pregnancy in individuals with nephritis should be terminated and the earlier this is done, the less probability there is of increasing the amount of renal damage. Future pregnancies should be avoided and contraceptive measures advised when the intelligence of the patient permits their use. For the average clinic patient operative sterilization seems the wisest procedure, although if the patient is near the menopause sterilization by X-ray may be employed. In the early months the pregnancy may be terminated by abdominal hysterotomy and, at the same time, a sterilizing operation upon the tubes may be performed. In the latter months of gestation the management of these patients is essentially the same as that of the other hypertensive toxemias in the latter part of the pregnancy.

TOXEMIA WITHOUT CONVULSIONS

The "true" toxemias characteristically appear in the latter months of pregnancy, and are supposedly due to toxins or toxic substances as yet unknown. Variations in the degree and character of the symptoms, signs and pathological changes in the various organs have led to numerous classifications. The milder forms of the disorder are often spoken of as low reserve kidney, albuminuria of pregnancy, recurrent toxemia, or nephrosis of pregnancy, while the more severe forms are most commonly known as pre-eclampsia or severe pre-eclamptic toxemia. It matters but little by what name they are known, as the immediate treatment and general management are the same.

The ideal treatment of the toxemias of late pregnancy would be prevention, but as far as I am aware there is at present no certain method by which this clinical syndrome can always be prevented. On the other hand, a careful prenatal regime does seem to reduce the incidence somewhat, although the main value of prenatal care in the toxemias of pregnancy is in their early detection and treatment, often terminating the pregnancy before alarming symptoms or convulsions appear.

During the prenatal period, adequate rest should be secured even if sedatives are necessary. Adequate intestinal elimination should be secured by either fluids, diet, exercise, laxatives or enemata. Diet is often considered a factor in the etiology of toxemias, although there is little or no actual proof upon which to base this assumption. Regardless of this connection, the diet should be a general well-balanced one, consisting mainly of fruits, vegetables, skimmed milk and carbohydrates, with limitations to prevent excessive gains in weight, limiting the total gain for the pregnancy to twenty or twenty-five pounds. Meat, fish or fowl should be eaten not oftener than once daily, while there should be some reduction in the amount of fat, salt and spices. The limitation of fatty foods tends to control the gain in weight, and at the same time seems to decrease the incidence of digestive symptoms. A restricted amount of salt intake seems advisable, while at least six to eight glasses of water should be taken daily. Either orange or tomato juice should be taken daily, as well as calcium and vitamin D in some form. The hemoglobin should be determined, particularly around the middle or latter part of pregnancy and, if significantly lowered, iron should be administered in adequate dosage. Any evident foci of infection should be eliminated, for, although it is highly doubtful that they play any part in the etiology of toxemia, it is felt that they may be factors in certain other complications of pregnancy, and the woman is, at least, better off with the infected focus removed.

If the prenatal patient shows some elevation of blood pressure, albuminuria, edema or an abnormal gain in weight, an early toxemia should be suspected and certain restrictions instituted. Limitation of physical activity, additional periods of bed rest and a reduction in the quantity of food intake is advisable. Rest and sleep should be obtained by sedatives if necessary, and intestinal elimination stimulated by the administration of laxatives.

If the signs and symptoms progress under this routine or if more severe when first seen, the patient should be put to bed, preferably in a hospital. A systolic pressure consistently above 140 mm. of mercury or a diastolic consistently above 90 mm. with a moderate amount of albumin in the urine, in spite of reduced activity, reduced diet and adequate elimination, ordinarily indicates bed rest. Daily observations of the blood pressure and the amount of albumin in the urine should be made.

Chemical studies of the blood such as the non-protein nitrogen, urea, uric acid, or blood chlorides may be made and may reveal findings of significance. The eye grounds should be observed from time to time. It is often advisable during the first forty-eight hours of bed rest to limit the intake to milk, water and sweetened fruit juices, restricting the total intake in twenty-four hours to 1,500 or 1,800 c.c. Sedatives should be administered to obtain rest, sleep, and relieve restlessness. Any of the sedatives such as bromides, chloral, or the various barbituric acid derivatives may be used. If the condition is at all severe or if the other sedatives are not effective, morphine or pantopon may be administered. After two or three days, depending on the severity of the condition, a more ample diet, preferably of low fat and low salt content, should be prescribed. If the condition shows marked improvement and the patient is still some weeks from term, activity may be gradually resumed under close observation, or if the condition remains about the same and the patient is still some weeks from term, this plan of treatment may be continued until term approaches. If the patient is at or near term, attempts should be made to induce labor. On the other hand, in those instances in which, in spite of absolute bed rest, together with sedatives, catharsis and dietary limitations, the signs and symptoms get progressively worse, the pregnancy should be terminated at an opportune time.

The method of terminating the pregnancy must depend upon all of the circumstances in the particular patient. Frequently labor may be induced by the administration of castor oil and quinine after an enema. If this is not successful, rupture of the membranes, preferably done some time after the administration of castor oil and quinine is usually effective. If these methods are unsuccessful, resort may be had to the intra-uterine insertion of bougies or bags. The occasional patient may be more safely delivered by Cesarean section, especially if the toxemia is of a fulminating character and rapidly progressing, or in the older primiparous woman in whom the presenting part is high and the cervix is long and firm, or in any instance where it seems that labor is apt to be unduly prolonged. During and after delivery the toxemic patient should be given sedatives and the amount of exertion during labor reduced to a minimum compatible with sane obstetrical care.

Toxemia With Convulsions

Restlessness, muscular irritability, persistent severe headache, visual disturbances and epigastric pain often herald the approach of convulsions. It is customary to divide the treatment of the convulsive toxemias into two general methods, the radical and the conservative. The radical method, which consists in immediate delivery, has been mostly discontinued, while the conservative method, which employs measures to control the convulsions, is the generally accepted one. Different types of conservative treatment have been recommended from time to time, but on the whole the results from the various conservative methods seem about the same. It appears that most of the mild cases of eclampsia will survive, while many of the severe ones will die regardless of the type of treatment.

The essential factors in the control and treatment of eclamptic convulsions seem to be sedation and elimination. During an eclamptic attack, the patient should be kept in a quiet, darkened room with a constant attendant. The tongue should be protected during the seizures by a padded mouth gag. Sedation may be obtained by any of the numerous sedatives, the most convenient and often the most effective being morphine, although chloral hydrate, the barbituric acid derivatives or magnesium sulphate intramuscularly may be used. Sedation should, however, not be pushed to the point of marked respiratory depression. Fluid balance may be maintained and urinary elimination apparently stimulated by the administration intravenously of 300-400 c.c. of hypertonic (20-25 per cent) glucose solutions every four to six hours. Venesection has been mainly discarded in the routine treatment of eclampsia, although it is at times still helpful in the occasional case of pulmonary edema or extreme hypertension. The cardiac function should be watched closely and the early administration of such drugs as digitalis and caffeine may tide over a circulatory emergency, while the use of the oxygen tent may be helpful in marked cyanosis and pulmonary edema.

It is perhaps unwise to adopt too stringent a routine in the treatment of all instances of eclampsia. The patients should be individualized and the details of the treatment varied with the exigencies of

the particular patient. At present our routine is approximately as follows:

1. Admit to a quiet, darkened room with a nurse in constant attendance.
2. Ascertain what sedatives have been given before admission.
3. Give morphine sulphate gr. ¼; may be repeated for restlessness but not oftener than every three hours.
4. Catheterized specimen of urine for examination.
5. Venepuncture for blood chemistry determinations.
6. Three to four hundred c.c. of 25 per cent glucose intravenously; repeat approximately every six hours.
7. Two c.c. of 50 per cent magnesium sulphate intramuscularly after each convulsion.
8. Digitalis and caffeine, venesection and oxygen tent as the exigencies of the case demand.

Most commonly labor begins spontaneously and progresses normally, and delivery should be effected by the simplest method after complete dilatation of the cervix. If, after a period of time, the condition seems stationary or perhaps progressively worse, and labor has not begun, it may often be simply initiated by rupture of the membranes. Abdominal delivery should be reserved for those instances in which some indication for Cesarean section other than eclampsia exists, such as pelvic disproportion or accidental hemorrhage.

In the occasional case, convulsions may cease and consciousness return without labor having occurred (intercurrent eclampsia). Such instances may be watched closely until the spontaneous onset of labor occurs or, dependent upon the condition of the patient, labor may be induced at an opportune moment by one of the simpler methods.

Whether delivery has been accomplished or not, as soon as coma disappears and consciousness returns, water, sweetened fruit juices and milk should be given by mouth and a saline cathartic administered as soon as feasible. As recovery occurs the diet may be gradually increased, although it is advisable to continue mild sedation for several days after disappearance of the coma and the return of consciousness.

Many patients with eclampsia improve shortly after delivery. The albuminuria, blood pressure and edema decrease, while the urinary output increases, and often by ten days or two weeks all evidence of the serious illness has disappeared. At times, however, the response is slow and the persistence of abnormal findings after six weeks is usually indicative of permanent damage.

Subsequent Course and Treatment

All toxemia patients should be followed carefully for weeks or months after delivery, and attempts should be made to determine, if possible, the degree of renal or vascular damage by blood pressure observations, eye ground and urinary examinations and kidney function tests. In some, the recovery from the illness may be complete without any evidence of renal or vascular damage, while in others some impairment may result, although so slight that it cannot be detected by any of our present tests except that of subsequent pregnancy. In still others the effects may be severe enough to produce unquestionable chronic renal insufficiency or to stimulate progressive vascular disease. If hypertension or renal insufficiency persists, subsequent pregnancies should ordinarily be avoided. If pregnancy should occur, and if the degree of hypertension or renal impairment seems to justify it, the pregnancy should be terminated and sterilization effected. Those individuals in whom all the signs and symptoms disappear promptly after delivery should be observed from time to time before attempting another pregnancy. When pregnancy does occur the patient should be followed closely throughout its course, for about half of them will again develop evidence of toxemia. Even in eclampsia, the old dictum that eclampsia hardly ever recurs cannot be relied upon, as we know that a certain percentage of eclamptic patients will have a recurrent eclampsia.

A MORE RATIONAL TREATMENT OF THE INSANE.*

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This paper, being included in the Symposium on Treatment, needs perhaps some explanation, for I should like, with your permission, to consider treatment in the sense of handling, managing or dealing with medico-legally, rather than from a purely medical viewpoint. Therapy along rational lines has steadily improved year by year as knowledge of the pathology of organic psychoses has increased and fundamental reasons underlying many of the functional psychoses are better understood. Yet, in dealing with the mental patient, or with the so-called insane, if you please, he is usually, if sick enough, subjected to other kinds of treatment than medical before he can even begin to receive adequate medical care.

Here may I pause to explain why I have used the word "insane" in a medical paper. Insanity has legal significance. It is not a medical term. Its definition is to be found in the code of the State. Measured by advances in the science of psychiatry the definition is long out of date, but its antiquity makes it more sacred in the eyes of the law. Experience in court has taught me that lawyers know what is insanity and doctors do not. Indeed, this is perhaps as it should be, but I find myself frequently laboring to adjust myself and speak the language of the law, when I am thinking of mental disease and a sick man and the lawyer, whose questions I am trying to answer, is thinking and talking of a man who must fit into the legal definition of insanity. As doctors we are concerned with mental illness, but some or many of the patients thus affected, because of the nature or severity of their sickness, must be deprived of their liberty to prevent harm or injury to themselves or others. In this event certain legal formalities become necessary, without which they may be not eligible to receive care and treatment in one of our State hospitals. It is chiefly of those mentally sick persons who have been or are to be declared insane by legal process that I speak, and therefore I have used the word "insane" advisedly.

Why, you may ask, do I not limit my remarks to the medical treatment of the insane, and why is the doctor concerned with any other kind of treatment? I answer, because the doctor is a party to certain non-medical treatment of these patients and, if he has not, like certain doctors of an earlier age, stoned the accused or the adjudicated, he, like Saul of Tarsus, has at least stood by, holding the habiliment and consenting.

I shall not have within the time allowed me opportunity to review the history of the early treatment of the mentally afflicted, to recall the treatment to which they were subjected in the days before Pinel, to trace the establishment of humane institutions for their care and the work of Dorothy Dix, to point out the evolution from the era of custodial care to that of a more hopeful medical attitude, and the recognition of so-called insanity as but another kind of sickness challenging the best skill of the medical profession—in short, to describe the evolution of the science of psychiatry.

Nor shall I have time to indicate except in the briefest possible manner the facilities for the institutional care of the mentally sick in Virginia. Some of you may not be familiar with the fact that the State of Virginia has a capital investment of about seven and a half million dollars in its five State hospitals, that there are in these hospitals 8,975 beds for mental patients, that we admit annually over 2,000 patients, and that there is spent each year for their care and treatment over $1,800,000.00. Though many of our patients are suffering from chronic mental diseases requiring chiefly custodial care in the ordinary hospital ward, we admit at each of the State hospitals quite a large percentage of acute and curable conditions requiring careful segregation in special departments where they may be studied and where they may be given individual treatment best adapted to their needs. At Central State Hospital we are just now completing a fireproof psychopathic building connected by cor-

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ridors with our Medical Center. This unit, established several years ago, is equipped as a general hospital and is on the American College of Surgeons' list of approved hospitals. Hereafter each patient coming to the institution will be admitted to this unit where he will be studied, the findings recorded and such treatment (medical, surgical or special) instituted as may be indicated. The length of time spent here before transfer to other departments will be determined, of course, by the needs in the particular case. We believe with the general hospital set up, conveniently located, and with the better trained nursing personnel, the average patient will have a greatly improved prospect of recovery. Intensive study and careful management during the most critical period of the illness will certainly be facilitated.

Now, how does the mentally sick person manage to get into one of our State hospitals, and how is he able to avail himself of the care and treatment so generously provided? In Virginia he may be admitted as: (1) a voluntary case, (2) an emergency case, (3) a criminal on the order of a judge or jury, and (4) a commitment by a lunacy commission.

In voluntary cases the law requires the patient to pay the cost of his transportation and the cost of care and treatment while in the hospital, except in indigent cases the hospital board if it sees fit may allow him free care for a maximum period of two months. No voluntary case, pay or indigent, may be received if his admission deprives any committed case of care and treatment. The voluntary commitment would be most commendable were it not for the fact that its provisions discriminate against such patients and hence discourage its general use. Only 4 per cent of admissions to Central State Hospital are voluntary.

In emergency cases on the certificate of two physicians that the patient is violent and dangerous he may be admitted but not held more than ten days. The emergency commitment in acute and violent cases is splendid in its intent but unfortunately is not made use of to any extent in Virginia. Violent patients are commonly placed in jail instead. Practically none of our admissions are by this method.

In criminal cases the courts may commit persons charged with crime to the department for the criminal insane for observation or, if adjudged insane, for treatment. The court commitment in criminal cases needs no special comment and could hardly be improved. Four per cent of our admissions are of this class.

In the so-called commission of lunacy a judge or justice of the peace and two physicians constitute a commission which, after examination and adjudication, may commit the patient to a State hospital. Ninety-two per cent of admissions to our hospital are through the agency of the lunacy commission. It, therefore, is the usual method of getting a patient into a State hospital. The forms used by the commissin are prescribed by law and consist of: (1) The *complaint* or petition in which a relative, friend, or any person complains and petitions a judge or justice of the peace to have the person suspected of being insane examined by a commission, (2) The *warrant* issued by a justice of the peace for the arrest of the said suspect and for the summoning of two doctors and witnesses, (3) The *interrogatory* or inquisition which I shall describe more fully directly, (4) The findings and *adjudication* in which the patient is adjudged to be insane, and (5) The *order of commitment* which is directed to the sheriff or sergeant and to the superintendent of one of the State hospitals.

Following the completion of these requirements, the sheriff is charged with the safekeeping of the patient until he can be sent for by the hospital authorities. Commitment papers must be mailed to the hospital and application made for admittance. Pending completion of arrangements which frequently results in delays for various reasons the patient is customarily placed in jail unless some one gives bond for his safekeeping. In jail he is treated the same as any other prisoner, no better, no worse. While in jail he is only a prisoner—not a patient.

What disposition is made of the commitment papers? One copy goes to the hospital, an entirely proper procedure as it gives information useful to the hospital physicians in understanding the patient, and another copy goes to the Clerk of the Court of the City or County in which the patient is committed, to be there filed in his office as a permanent record. I should like to emphasize this point and call attention to the nature of this permanent record which is filed in the clerk's office, a public record open to all and sundry who may wish to peruse it for reasons of business, finance, litigation, malicious-

ness, gossip or idle curiosity. The major portion of this document, the interrogatory—sometimes called the inquisition—is prepared by the two doctors of the commission and deals with the most intimate details of the patient's private affairs and his family and personal medical history. For example, the doctor from his personal knowledge and from information furnished by witnesses tells to the world what were the patient's characteristics before he became overtaken by the illness which is to deprive him of his liberty, his right to vote, his legal capacity to make a will, to write a check, to make a deed or, in short, of most of the privileges of citizenship. The doctor must determine and record whether or not he was honest, lazy, selfish, revengeful, stingy, speculative, quarrelsome, jealous, etc. In the case of a woman, whether she is chaste or a prostitute, the number of her miscarriages and many other matters relating to her sex life. He must record the family history as to insanity, epilepsy and inebriety, the value of the patient's property, his annual income, his record as to crime or misdemeanors, his Wassermann reaction, and, finally, all the details as to speech and behavior as observed by the commission. These and perhaps a hundred and two score other questions must be answered fully if you comply with the law.

This remarkable document, the interrogatory, is the medical part of the paper, if you please, for it is signed by only the two doctors. The information called for is such as no ethical physician would think of divulging to the public regarding one of his private patients, yet daily (between 1,500 and 1,800 commissions of lunacy are held each year) in Virginia doctors are making such records to be filed as public documents that all posterity and he who runs may read.

About whom is this record made? The pauper, the delinquent, and the ne'er-do-well? Yes, and also about your daughter, your son, your father, your mother and mine, or any other person who becomes sick in mind and must needs avail himself of the benefits of treatment at one of our State hospitals. One might let his mind run in imagination and see in the years to come heart aches and embarrassments, bitterness and tragedy resulting from the accidental or incidental perusal of this personal—private—public document by those interested in genealogy and history or by others who for sundry reasons might read the record. It might not be pleasant for a young man to learn in after years that there is a public record in addition to the hospital one which certifies that his father was afflicted with syphilis or a young woman that her mother's morals were once not in conformity with the social code. It occurs to me that in dealing with or handling the unfortunate patient who must be committed to a State hospital we have not kept pace with modern ideas as to mental disease and our treatment of them falls short of being rational in exact proportion to our dereliction in this respect.

I object to the present form of commitment, feeling it to be an instrument in the hands of doctors frequently inflicting unjust treatment on mentally sick persons seeking hospital treatment.

I object to the procedure which places a mentally sick person in jail and in the same category with the criminal, because forsooth he has encephalitis instead of appendicitis, a neoplasm located within the cranial instead of the abdominal cavity, or because at last he has reached the stage when the silver cord is loosened and the almond tree is flourishing, when the keepers of the house tremble, the strong men bow themselves, and the grinders cease because they are few. Jails may be excellent and safe places of confinement, but they are not hospitals. Jailors may be kind and humane, but they are not doctors. The care and treatment of the sick is our own responsibility, and we should not and, I believe, will not shirk it.

I object to the statute which discriminates between the citizen of Virginia who wishes to enter a State hospital for treatment as a voluntary patient and the one who is arrested on a warrant, cast into prison and committed.

I propose that the laws relating to the commitment of insane persons be so revised that the medical portion of the commitment form must not constitute a part of the public record in the clerk's office; that the petition be changed so as to omit the details relating to the patient's acts upon which the petition is supposed to be based and that this and the other portions required to be filed in the clerk's office be simplified so as to contain no more than the fact of complaint, adjudication and commitment.

I propose that the medical portion of the form be revised in such a manner as to furnish all necessary medical, social and other history and that this portion be sent only to the hospital to which the patient is to be admitted.

I propose the passage of a law legalizing the physicians' certificate commitment, somewhat similar perhaps to the one which has been used successfully in Maryland for a number of years.

I propose repeal of the provision in the voluntary commitment law which discriminates against the voluntary patient and consequently discourages a wider use of this method of admission.

I recommend to the physicians of the State a wider and more general use of the emergency commitment provision.

I recommend in order to minimize unavoidable delays that the responsibility of getting the patient to the hospital be that of the county or city of the patient's residence, and that where the patient is not violent and it is practicable, a member of the family, nurse or social worker rather than the sheriff accompany the patient.

Others have for years protested and I endorse the protest against the use of jails as places of detention for mentally sick persons awaiting transfer to the hospital. It occurs to me that the feasibility of the establishment of psychopathic wards in general hospitals in different parts of the State where a mentally sick patient could be temporarily cared for pending transfer to the State hospital is well worth considering.

Authorities of the two medical schools of the State are desirous of better facilities at their respective schools for the study of mental diseases. I heartily endorse this idea as I believe not only the patient under observation for this purpose will be benefited, but from a better understanding of psychiatry by the student will come a larger percentage of physicians who in future will be able to render a better and more rational service to the mental patient.

A committee, of which I am a member, is at this time considering certain changes in the commitment laws which we hope to have submitted by the proper authorities to the next legislature. We feel that the time is opportune to endeavor to break some of the shackles which bind us to an unenlightened age and impose unnecessary legal machinery in dealing with a sick person. While recognizing mental incompetency as a condition having legal implications, we would stress the fact that we are dealing primarily with a disease and incidentally with insanity.

My excuse for this *quasi* medical rambling is that the subject is one which concerns physicians. Unless as physicians we take the initiative in legislation which concerns the sick or in medical matters generally, others will, with results which will be far from satisfactory to us.

In conclusion, the committee referred to invites the cooperation of the members of this Society in its endeavor to put into effect measures which it feels are in the direction of a more rational treatment of the mentally sick person who becomes insane.

Discussion of Papers by Drs. Rinker, Geisinger, Williams and Henry, in the Symposium on Therapy

Dr. J. C. King, Radford: I am very much pleased that Dr. Henry has selected this subject for his paper, and wish to congratulate him on having presented the facts so fully. For years I have been impressed with the injustice of this law and the necessity of its being changed. I trust the medical profession will give due consideration to it and lend its influence to having a bill passed in the next legislature correcting this method. It is entirely unfair, unjust and unnecessary to have a patient's life history, as well as the family history, aired to the public by making it public property in the clerk's office in the county in which he lives. Making this history public property is entirely unnecessary and unfair to the patient. The family physician will withhold valuable history that should go to the institution with the patient, for the reason that he does not want it aired to the public. There is no more reason why such history should be exposed for a patient who is mentally sick than one who is suffering from a physical ailment. As I have said I trust the Medical Society of Virginia will, through its legislative committee, ask that this law be changed and a more efficient one substituted in its place.

Dr. A. I. Dodson, Richmond: I wish just to emphasize one or two things that Dr. Geisinger mentioned. I am particularly glad that he called attention to the importance of keeping up the nourishment in patients with acute renal infection. I think we too frequently limit the diet of patients suffering with acute pyelitis because of the fact that they have fever. I have for a long time made it a practice never to restrict the patient's diet at all if he feels like eating.

Urinary antiseptics, I think, have a place in the treatment of chronic renal infection but are of no value in the treatment of acute infections. If the patient is given enough fluid, the drug will be so diluted that it will have no effect. Water is the most important single item in the treatment of acute urinary infections.

Even if the patient is vomiting I urge the intake of a large volume of water. I think they keep down a portion of it. If they do not, fluids must be given in some other way.

Regarding mercurochrome, I have not used that to the extent that Dr. Geisinger has, but the cases in which I have given it have not suffered any ill effects from it, and on a few occasions I have had rather startlingly effective results. I use neosalvarsan much more fre-

quently; and, although I realize it is not expected to be of help except in the coccic infections, many times it is not convenient to find out if we are dealing with the coccic infections and very often the coccic infection is overgrown by the Colon Bacillus. I have many times gotten results from the injection of neosalvarsan into the vein, and the benefits have occurred so frequently that I think perhaps we have coccic infections much more frequently than we have thought.

If there is poor urinary-tract drainage, as evidenced by a septic type temperature, with chills and marked tenderness over the lumbar region and along the course of the ureter, drainage by means of a ureteral catheter is indicated.

DR. C. J. ANDREWS, Norfolk: Dr. Dodson has mentined pyelitis of pregnancy and the question of drainage. A considerable number of these cases have some disability even after the pregnancy is ended. It is important that these be cleared up before another pregnancy at least. Suitable dilatation of the ureters will usually give satisfactory drainage and do much to prevent subsequent trouble.

The treatment of toxemia of pregnancy which Dr. Williams has described cannot be objected to. I have used magnesia sulphate in the vein instead of the muscle.

I wish to call attention to the use of potassium citrate in the treatment of early toxemia with beginning edema. If the patient is regularly weighed she may be found to have gained six or eight pounds in a week even without much noticeable edema. Potassium citrate grs. 30, every three hours, often causes this to disappear rapidly; even when there is considerable edema the result is often spectacular. Of course, after the kidneys have become seriously damaged nothing is very satisfactory.

Control of weight by accurate regulation of diet is also most helpful—counting calories has been most effective. An excessive increase in weight is known to favor toxemia.

DR. F. O. PLUNKETT, Lynchburg: I just want to say a word about my friend Dr. Geisinger's paper and what he said about the forcing of fluids. It happened that I was in a big hospital several years ago, where they delivered fifteen to twenty patients in twenty-four hours, and I was never more surprised in my life than to see that they gave no drugs. The only thing they did was force fluids.

Another thing mentioned in Dr. Geisinger's paper was throwing the reacton of the urine alkaline for a certain length of time, then acid for a certain length of time following that. Whether it is any good or not Dr. Geisinger knows better than I do. I think I have gotten results from that.

As to Dr. Williams' paper, I want to say a few words. The man doing deliveries in the rural distrcts and in the small towns is the man that needs information about the toxemias of pregnancy. Dr. Williams will never have toxemias in his private practice. The men from the small towns and the country like me (and I am sorry there are not more of them here this afternoon) are the ones that send patients in to Dr. Andrews and Dr. Williams with toxemia of pregnancy.

I am only sorry that Dr. Williams has not told us this afternoon what is the thing that we call toxemia of pregnancy—what is the cause. We do not know what it is, what causes it. We know that the pregnancy produces from 20 to 25 per cent extra work on every organ in the pregnant woman, from her nervous system on down to kidneys, heart, lungs, and digestive system. What causes toxemia of pregnancy? I am still asking Dr. Williams.

There is no need to interrupt the pregnancy unless I fail to send the woman in or unless I fail to treat her properly during her pregnancy. If the woman is a patient of Dr. Williams' and goes to him when she is first pregnant, she is not going to have convulsions. If she comes to me then, Dr. Williams or Dr. Andrews may have to interrupt her pregnancy, unless I give her first class pre-natal care. Whatever is done, I agree with Dr. Williams that medical treatment should always be employed, whether she is seven months pregnant or even below that, or whether she is eight or eight and a half months pregnant. Try the medical treatment, rest in bed, diuretics; give them the citrate treatment if you want to. It will not do any harm. Give that woman a chance to clear up her toxemia of pregnancy before you do a Caesarean section on her; and give her a chance to deliver from below before you do a Caesarean section on her, unless there are certain signs and symptoms, which you men as obstetricians should recognize, which make you feel that she will not deliver from below without possible loss of the baby or dire results so far as her physical condition is concerned. I want to emphasize that. *There are too many Caesarean sections being done,* and I do not believe in doing Caesarean sections on toxic women (and I am not an obstetrician, I am just a man practicing out in the country), unless there are *certain symptoms,* that the *obstetrician should know,* that make him feel he will lose the baby unless a Caesarean section is done, or that he will lose the woman.

DR. JAMES K. HALL, Richmond: I regret that on account of my late arrival I heard only the concluding paper in this symposium.

I want to ask if it will not be possible and feasible to release Dr. Henry's paper to the press. I think it should be read by everybody in Virgini.a

DR. CLAIBORNE T. JONES, Petersburg: In Petersburg we have lots of ignorant cases, and perhaps lots of ignorant doctors (?), too. I have seen quite a lot of cases of toxemia of pregnancy. The majority of them I had never seen before. But we have some cases in patients that we *have* seen before. There are some cases that will not cooperate with the physician—will not come back when he tells them to, therefore we cannot control them.

I enjoyed these papers very much. I want to thank Dr. Williams for his. Dr. Henry's paper I especially enjoyed.

DR. J. F. GEISINGER: I appreciate very much the references to this paper.

You possibly recall that throughout this review the conservative line of treatment recommended is applied to acute, uncomplicated infection of the upper urinary tract, and I emphasize that one of the dangers in assuming the case is uncomplicated is the presence of unsuspected static urine. The case pictured by Dr. Dodson, with rigid muscles and septic chart, is not an uncomplicated case. Nor do I consider pyelitis of pregnancy uncomplicated. It was impossible, however, within the time limits of this discussion, to go into all the ramifications. Pyelitis of pregnancy is a story in itself. Static urine due to pregnancy is just as serious as static urine due to stone or any other cause. In pyelitis in pregnancy, if there is not very rapid and marked improvement in the patient, that case should be regarded as complicated. I should like to have it understood that this long drawn out line of treatment should not be applied to such a case of pyelitis of pregnancy where the pelvis is filled up with retained urine, because that is a very serious condition.

Acidification is much more rational but there is no other reason why you should not alkalinize the urine. It may make the patient feel better, but it will not kill the bacteria.

DR. T. J. WILLIAMS: I have not utilized potassium citrate in the treatment of the toxemias of pregnancy, but it may be of value in those patients with edema. Dr. Andrews feels that it is very useful in the treatment of edema, and I am planning to give it a trial.

Dr. Plunkett wished that I had given the cause of the toxemias of pregnancy. I did not for the simple reason that I do not know the cause and, as far as I am aware, neither does any one else. While of course prevention of the toxemias is the best method of treatment, it must be recognized that at present all of them cannot be prevented.

The importance of subsequent postpartum observations should be stressed, and the patients should be followed for weeks or months afterwards. Some of them will clear up entirely until another pregnancy may again precipitate the condition, while others will have definite sequelae with hypertension or renal insufficiency, and these individuals should not be allowed to have subsequent pregnancies.

ENDOCRINES AND PERSONALITY.

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and
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Those of us who have watched the rebirth of endocrinology and have nurtured the growth of this science are gratified to know that it is taking its place as an important factor in progressive medicine. The modern endocrinologist has had to overcome the fallacy existing in the minds of his scientific brethren, as well as his less well-informed neighbors, that he occupies himself solely with the problem of sex glandular dysfunction or devotes himself exclusively to the search for the fountain of youth. According to Englebach, "The realm of the study of the internal secretions today encompasses the fields of general medicine and surgery, serves as a vital factor in psychiatry, in obstetrics, and in gynecology, and each day brings forth new facts that widen the scope of this rapidly growing medical infant and sustains the usefulness of the endocrinologist." The progress has been and is so great that the over-enthusiast of today may become a scientist of first magnitude tomorrow; speculative hypothesis turns out to be scientific fact, and empirical preparations take their place among the great discoveries of the age. Those who are content to stand by blind and unseeing as new facts round into view, quickly find the parade has passed them by and left them ignorant of new tools and helpful ideas of immense practical clinical value.

The endocrines are the initiators and regulators of the elements of human vitality. Physical and mental development, consistent with the age of the individual, is directly dependent upon the delicately balanced, harmonious equilibrium of this group of glands. Small but mighty, they pour their powerful secretions into the blood stream, and activate and modify the speed and direction of every vital process. Hormonic action regulates conception, creates gestational stability, controls prenatal growth, and probably determines the onset of labor. Then, from the cradle to the grave, incretory products govern the course of growth and metabolism.

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Abnormalities of incretory function create individuals disproportionately precocious, premature, or retarded for their age. Transient or permanent abnormalities result from a modification of their activity, and the modern clinician is aware that these glands are responsible for more incompetency and delinquency than the chronic diseases of other systems. Nor is their derangement entirely set apart from extrinsic causes, and the endocrinologist now recognizes the specific role that foci of infection—tonsillitis, endocervicitis, and the like—play in creating endocrinopathies. Many of the contradictory reports of endocrine therapy are definitely the result of ignoring what is already known of the extrinsic factors of disease, but he who combines this knowledge with the facts to be gleaned from this new and valuable adjunct, this intrinsic, etiological factor of mental and physical derangement, gains a more complete understanding of his patient and secures specific aids to his therapeutic armamentarium.

In discussing the relationship between endocrines and personality, it will be easy to understand how important a role these glands play in personality development if we will remember that the personality is the outward expression of inner turmoil or calm, of inherent well-being or misery, of a self estimation of one's physical and mental equipment, and of a compensatory adjustment to that estimate as well as the adjustment to society in general and to more closely related and more critical individuals in particular.

Consider, for instance, the young girl or boy who develops an unsightly acne at puberty; the girl feels she is socially unattractive and at that hypersensitive stage may develop inhibitions that create her a permanent "wall flower," a timid and self-conscious creature that skirts the fringes of youthful pleasures yet never ventures to participate wholeheartedly.

No one who has observed the pitiful scene of the obese woman, striving in devious ways to attain the sylph form of her more fortunate sister, can fail to understand the inner tragedy. Here is one who starves on a diet of miserly calories to the point of destruction of her natural resistive powers, who by so doing leaves herself open to the inevitable trend of dietary and infectious disorders that follow in the wake of such a course, and who, oddly enough, remains obese. Here is another who plies herself with reducing salves and baths, with thyroid, with salts, and with a whole host of quackeries and numerous patent products of unknown toxicity or value. What can the result be? Yet these are often people of understanding and intelligence who, by virtue of that very intellect, are dissatisfied with themselves and read social disapprobation in the eyes of others.

Here is the placid, sluggish, slow moving, slow thinking dullard, the result of an under-functioning thyroid, who, as Boyd describes her (p. 524), "is usually obese, intensely phlegmatic, and will sit for hours without moving." The face is broad, Eskimo-like, expressionless. Contrast her with the energetic, forceful, business or professional leader, the high pressure salesman, the slave driving super-executive, who, thanks to an obliging gland, is an inherent top notcher, a man who creates a nation's history and has a masterful grip on the world's affairs.

Here is the pathetic case of cretinism, the "sad, old child," who, like Peter Pan, never grows up but remains a dwarf with undeveloped mind, skeleton, and sexual organs. Sir William Osler, in a passage taken from Harvey Cushing's biography, presents the picture of this human transformation and rightfully labels it the "pariah of nature."

Every gang of growing boys is an endocrine museum. Aside from the hereditary forces of growth, the factor of thyroid, pituitary, and gonadal function makes itself evident even to the casual observer. No group is complete without "Fatty," the rotund, good-natured youngster, who, despite his adiposity, displays a ravenous, uncontrollable appetite for food, moves slowly, thinks slowly, is the butt of all jokes, is easily amused and quite as easily hurt and ready to cry. The "Sissy" of the crowd is usually a graceful, handsome little lad, slight of build, quiet and reserved, and non-athletic, with a high pitched voice, hair of abnormal texture and distribution, and a general retarded growth and delay in the appearance of secondary sex characteristics. We all also recognize "Slim," the tall gawky lad, whose arms and legs are disproportionately long as compared with the rest of his body, who feels as much at home in the parlor as a bull does in a china shop. If his abnormal growth continues, we see him later in life as the Carnera of the prize ring, the strong man of the circus, the hero of the gridiron, or the stroke on the varsity

crew. We might also mention the dwarfs and midgets of the side show and vaudeville stage, possessed of all human wants and vices, and virtues, but condemned to a life of doll houses and baby clothes, who retain a permanent resentment and cynicism over the fate that decreed such devastating derangement of incretory function.

The menstrual function in the female is a normal physiologic process which in the past has been associated with numerous superstitions and taboos. Menstrual blood was regarded as impure, and even today in many parts of the world women are isolated during this period for fear they will contaminate whatever they touch. As the condition is so completely misunderstood by the lay public, it is small wonder then that many strange ideas arise from the derangement of this purely endocrine function. The woman with amenorrhea wonders what is lacking in her make-up and secretly frets over the thought that she differs from her sisters. Is she capable of normal marital relations, of child bearing, of heterosexual happiness? Is she doomed to an early disappearance of her youth? Underlying all endocrine imbalance and personality change is a strong neurotic element, and much fretting and irritability, much insomnia and general malaise is directly traceable to a disturbed incretory function and the knowledge by the patient that she is unlike the great majority of her sex. The restoration of normal menstrual function to a previous amenorrheic can change a depressed, unhappy, introverted personality into a buoyant, companionable, young lady of charm.

Dysmenorrhea.—In the days of crinoline and fainting spells, when every woman's purse was equipped with the usual "smelling salts and an aspirin, my dear," when every female was a hothouse plant shielded from the weather and other inclemencies of life, it was natural for her to spend the greater part of her existence at home, in bed or up and about, a creaking, whining, delicate creature. Today the scheme of things is changed. Women are forced to shoulder greater burdens and to acknowledge no physical or mental handicap. The woman with painful menses—and there are still many who are required to go to bed at that time—is often forced to bear up under this added strain to the point where fear of the next expected period is sufficient to bring on a trend of symptoms that are devastating in themselves. Here, again, is the strong tendency to neuroses; and here, again, we cannot condemn this group as merely neurotic, for their symptoms are based on definite functional derangements. Here, too, the endocrinologist holds out the first real hope for satisfactory cure. No longer is hospitalization and a long trend of surgical measures necessary. The mechanical and surgical contrivances of the past have been relegated to the dust heap; 58 per cent of cases definitely cured, 32 per cent definitely improved, and no improvement in only about 8 per cent of the cases shows specifically what can be done with endocrine therapy. The return to normal happy existence which these patients demonstrate shows again the close relationship between this group of glands and personality reactions.

If the scientific investigator applies his realistic attitude to the problem of happy marriage, his approach is probably as follows:

He disregards the superstitions and taboos that beclouded the issue in the past. He casts aside the theological dogmas and popular platitudes. He gives due credit to such factors as economic security, freedom from parental interference and the like, and readily arrives at the conclusion that marital happiness is based on happy sex life. He may go even further and state that such happiness provides the basis for most of our joy in life, even though he may not agree with Freud that sex is the primary motive in all of our deeds.

Consider, then, the influence of disturbed gonadal function on personality change. Here, wedded to the frigid female, is the normally aggressive male who finds no active response in his mate, no relief for the nerve tension created by unsatiated desires and who eventually and unwillingly strays from the paths of established social order at the price of destroyed self-respect and often to the destruction of home, position, and career. His wife, by a long process of self-accusation and through the knowledge that her frigidity is responsible for the loss of the love of her mate, develops neurotic traits and tendencies that only widen the gulf between them. The problem is frigidity, and the result, if untreated, is apparently disastrous. Often the situation is reversed—a highly active female bound by marital ties to a placid or impotent male. His sense of inferiority is heightened and contrasted by her aggressiveness. Adjustment under such circumstances is indeed a problem. Every day increases the number

of cases of older women, long past the menopause, who are still fired with excessive zeal in this regard, women in the sixties and seventies married to men long past all desire. To such women are denied the peace and tranquillity of senescence. They are morbid, inwardly agitated, unjustly ashamed, and outwardly irritable, all of which belies the many finer qualities of the character they possess.

Consider the plight of the couple, happily married, who are unable to raise a family because of a functional sterility in the wife. In one such case, the husband was the last and only son, descended of an old and famous family. The marriage unfruitful, the wife became the object of familial scorn, and so great was the social ostracism directed against her that she became morose almost to the point of insanity. Happily her condition responded to proper treatment and with the birth of a son the last vestige of her unhappiness disappeared.

Lastly, we bring you the picture of menopausal distress. No doubt all of you have observed the emotional imbalance that accompanies this important period in a woman's life. There is no system in the human body but that feels the effects of this revolutionary endocrine readjustment. Severe headaches, hot flashes, backaches, visual disturbances, dizziness, disturbances of digestion, abdominal aches and pains, nervousness, insomnia—yes, even insanity—all follow in the wake of this gigantic glandular upheaval. It is inevitable that the personality suffer great changes at this time. Today, because of the advances in endocrinology, it is no longer necessary to allow a woman to crash from one phase into the other. Her way can be eased, her symptoms controlled, and the entrance into menopause be made as uneventful as any other period of her life.

We have attempted to show in this paper the relationship between endocrines and the personality. In so doing it was inevitable that we should show the importance of this new science to every phase of medicine and to every phase of life itself. We have discussed the effect of endocrines on physical, mental, and sexual growth, and have shown how a knowledge of these glands gives a more comprehensive picture of the individual patient.

The endocrinologist relies on certain specific tests —the basal metabolism test for the thyroid, and the presence or absence of ovarian, pituitary, and gonadal hormones in the blood and urine to determine the function of these glands. He has specific aids in treatment—thyroid, the newer endocrine prepations, and the use of fractional doses of X-ray to ovaries, pituitary or both. He has gone far in his researches, but much remains to be done. Cushing many years ago said that "endocrinology sailed like a bark on an uncharted sea." That is no longer so; our charts show many ports of accomplishment and guide us to achieve new results. The way points to many new and interesting discoveries and the field offers the finest and most optimistic prospects to the searcher after medical and humanitarian truths.

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CHORDOMATA AND REPORT OF A CASE.†

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It has recently been our privilege to observe and to treat a patient suffering from a tumor of the lower end of the spine. We believe that this tumor is a chordoma. The relative rarity of this kind of case, and because such cases are being reported in gradually increasing number, has warranted the reporting of our case. According to recently available reports,[1-9] there are 121 cases on record. We shall also briefly review the embryology and the characteristics of chordomata.

Virchow,[2] in 1856, was the first to describe these tumors. He reported finding soft transparent jelly-like nodules at the spheno-occipital synchrondrosis.

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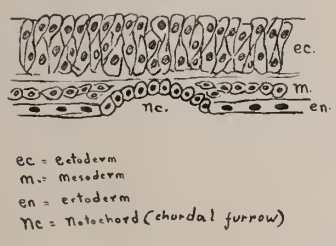
†Read before the Norfolk County Medical Society, December 10, 1934, Norfolk, Va.

which did not show active growth or infiltrative properties. He designated them as ecchondrosis physaliphora, because the nodules were always situated near the cartilage, and they were of a glassy jelly-like consistency, often associated with exostosis. He believed the physaliphorous cells were vacuolized cartilaginous corpuscles.

Muller,[3] in 1856, however, was the first to suggest the relation of these growths to the notochord. He wrote, "a direct relation of these growths to the chorda dorsalis cannot be overlooked and I consider them to be excessively growing remnants of the chorda. Whosoever likes the name may designate these masses as the chordoid tumors or chordomas."

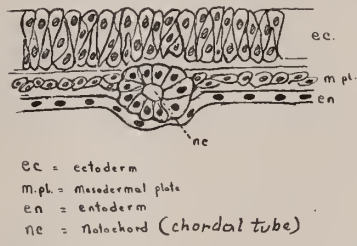
groove an axial proliferation and thickening of the entodermic cells takes place; this thickening assumes the appearance of a furrow—the chordal furrow—the margins of which come in contact, forming the chordal tube. Soon the enlargement of the composing cells converts it into a solid elastic rod surrounded by a cuticular sheath secreted by the cells. It extends throughout the entire length of the future vertebral column and reaches as far as the anterior end of the mid-brain where it ends in a hook-like extremity in the region of the dorsum sellae of the sphenoid bone. It lies at first between the neural tube and the entoderm of the yolk sac, but soon becomes separated from them by the mesoderm which

Modified drawing from Morris's Anatomy, fifth edition, page 15.



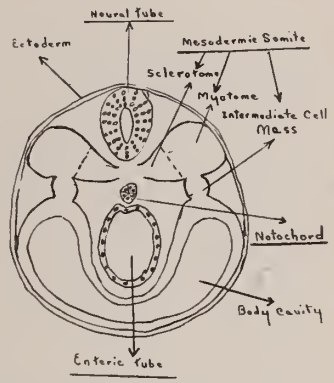
ec = ectoderm
m = mesoderm
en = entoderm
ne = Notochord (chordal furrow)

Fig. 1.



ec = ectoderm
m.pl. = Mesodermal plate
en = entoderm
ne = Notochord (chordal tube)

Fig. 2.



Redrawn from J.P. McMurrich's Manual of Human Embriology, Sixth Ed., page 78.

Notochord.—At first a median group of entodermic cells form a flat and curved band,—the chordal furrow.

Notochord.—The edges of the band come in contact and form the chordal tube.

Notochord-Fig 3.—Soon the enlargment of the composing cells converts it into a solid elastic rod. At this stage the notochord lies between the ectodermic neural tube and the ventrally located enteric tube which is of entodermic origin.

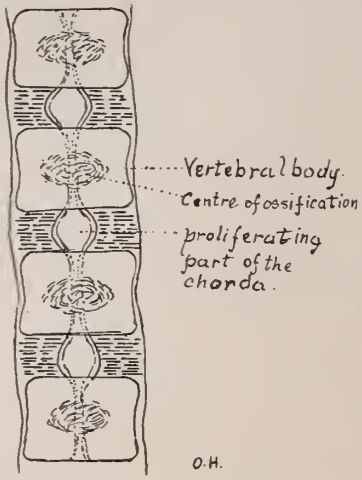
The weighty opinion of Virchow prevailed, however, until 1894 when Ribbert conclusively proved that the soft clivus tumors were groups of physaliphorous cells and were the remnants of the chorda dorsalis or notochord.

To properly understand the exact nature of these growths a brief revue of the embryology seems in order.

The notochord[4] is the foundation of the axial skeleton and consists of a rod of cells situated on the ventral aspect of the neural tube, and around it the segments of the vertebral column are formed. It develops simuultaneously along with the neural tube. At a close ventral position to the medullary

grows medially and surrounds it. From the mesoderm surrounding the neural tube and notochord the skull and the vertebral column and the membranes of the brain and spinal cord are developed. At the end of the fourth embryonic week, as the vertebral column is formed, the appearance of the vertebral bodies breaks the continuity of the notochord. It then becomes enlarged in the region of the intervertebral discs, and for a time it assumes a nodulated appearance. Ultimately the notochord disappears as a distinct structure, but remnants of it are believed to exist during the first months after birth as considerable central masses of spongy substance in the region of the intervertebral fibro-car-

tilages. During the months following this period a process of atrophy reduces the notochord to the central matter of the intervertebral discs: the nucleus pulposus. (See Fig. 1 to 5.)

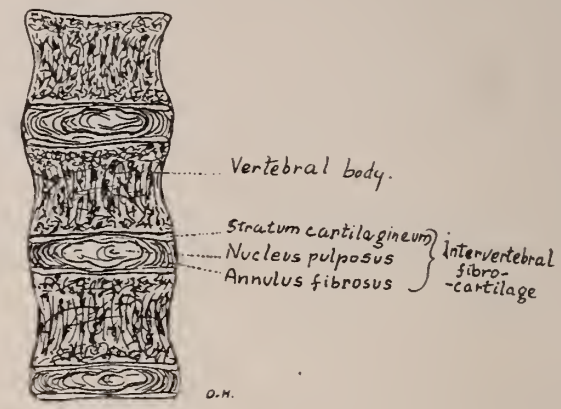


Notochord. Fig. 4. (Diagram) At the end of the fourth embryonic week, as the vertebral column is formed, the appearance of the vertebral bodies breaks the continuity of the chorda. It becomes enlarged in the region of the intervertebral discs and presents a nodulated appearance.

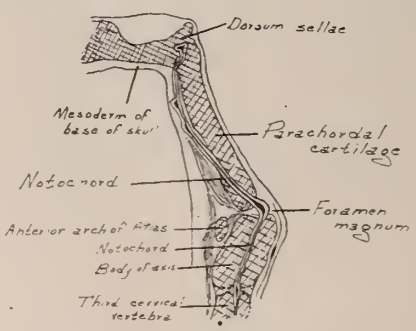
It is interesting to note, writes Piersol,[5] that in the connecting link between the vertebrates and invertebrates, the amphioxus, a small marine animal, the notochord remains as the permanent and sole spinal axis.

The extension of the notochord into the region of the head is of interest from a morphological and practical[6] point of view. It extends through the base of the cranium from the anterior border of the foramen mangum into the posterior part of the sphenoid bone. Its presence in the posterior part of the skull suggests that this region was primitively of vertebral nature. As the notochord passes through the occipital portion of the skull it pierces the basilar portion of the occipital region first from within outward and then from without in. It lies, therefore, for a short distance on the ventral surface of the rudiment of the occipital bone, in the dorsal wall of the pharynx. And this explains how some of these tumors which will be described later, are to be found in the region of the posterior pharynx due to a proliferation of the remnants of the pharyngeal portion. (See Fig. 5a.)

The development of the notochord is represented at an early stage in the ontogeny and to a certain extent the phylogency of all of the higher vetebrates. As development proceeds fluid vacuoles appear in



Notochord Fig. 5. – Ultimately the notochord disappears as a distinct structure and during the first months following birth a process of atrophy reduces it to the central matter of the intervertebral discs: the nucleus pulposus.



Sagittal section of cephalic end of notochord.

Fig 5a – Redrawn from Gray's Anatomy.

The notochord extends through the foramen magnum into the posterior part of the sphenoid bone, ending there in a hook-like extremity. As the notochord passes through the occipital portion of the skull, it lies for a short distance on the ventral surface of the rudiment of the occipital bone, in the dorsal wall of the pharynx.

the cytoplasm of the individual cells and the cell body becomes distended and turgescent, and this accumulation of fluid provides firmness and elasticity

for the support of the primitive skeleton. At an early stage of development the notochord becomes covered by a thin refractile layer, the primary sheath[7]; the superficial cells then continue to secrete a jelly-like mucoid material which accumulates immediately internal to the primary sheath and forms ultimately a secondary sheath around the notochord. The peripheral layer of cells thus discharge their secretion and form a layer of compact cells—the notochordal epithelium—and centrally the secretion accumulates within the cytoplasm of the cells which become distended with globules.

In the development of the tumors arising from the remnants of the notochord certain or all of these phases of development of the structure are found. In some, according to Cappell[7] the tumor cells appear to reproduce with considerable fidelity the various stages in the ontogeny of the notochord. Areas of clearly demarcated epithelial cells represent the second stage of the development of the notochord. Later differentiated cells with the characteristic mucinous secretion of the notochordal cells are found. In places the secretion is poured out freely into the intercellular spaces and the cells become shrunken and the appearance of the notochord at a more advanced stage is shown. In some tumors the cells show the development of the notochord when it becomes enclosed in the centers of the intervertebral disc to form the nuclei pulposi with the irregular syncytial strands and large vacuoles of uncertain nature. The tumor may show definite sheaths around its small invasive elements representing a reversion of the tumor cells to a stage far back in the ontogeny of the individual and the phylogeny of the vertebrates.

TUMORS

Tumors of notochordal origin may, therefore, be found arising anywhere from the dorsum sellae in the skull to the tip of the coccyx. Ribbert demonstrated the derivation of the chordomas from notochordal remnants experimentally in animals by puncture of the nucleus pulposus in the center of the intervertebral cartilaginous discs and produced tumors of similar gross and microscopic appearance as those found pathologically. Linck and Warstat, as reported by Kwartin and Stewart,[2] state that "during embryonal life there can be demonstrated in certain places along the course of the notochord, nests of apparently extruded chorda cells outside of the vertebro-skull basis anlage which are in direct and close connection with the surrounding soft tissues." Cappell states that there exists normally a central thread of chordal tissue which channels or perforates the vertebral bodies. While such threads of cells serve as sufficient basis from which notochordal tumors in or on the vertebral bodies may arise, it is thought that an occasional chordoma originates directly from the nucleus pulposus. According to Cohnheim's theory, such observations may explain the origin of these tumors.

Accordingly, chordomas may be:

1. Hypophyseal.
2. Nasopharyngeal.
3. Maxillary.
4. At the tooth of the epistropheus.
5. Vertebral.
6. Caudal.

While these tumors are quite rare the most common sites are at the cephalic end and at the caudal end of the notochordal remnants. The latter may be antesacral, retrosacral or within the bone.

Small jelly-like nodules designated by Stewart as ecchondrosis physaliphora spheno-occipitalis are occasionally being found at autopsy at the clivus Blumenbachii or dorsum sellae. When, however, these tumors become large enough to cause symptoms, then the term notochordal tumor or chordoma is justified.

Chordomas are usually slow growing tumors and do not as a rule lead to an early fatal issue. They are generally regarded as malignant. The following comparison may be made concerning the average duration of life in case of tumors of the spinal region:

Chordoma	4.8 years.
Endothelioma	3.8 years.
Carcinoma, metastatic	1.8 years.
Sarcoma	1.3 years.

The average course of the spheno-occipital chordoma is shorter than the duration of the corresponding sacral tumor, the former being 2.8 years, the latter 6.4 years. The degree of malignancy varies however. Kwartin writes, "many grow slowly, are locally invasive, infiltrating and surrounding connective tissue or musculature and sometimes destroying portions of the bones." Chordomas very often show recurrences after operation, according to Stewart in 86.5 per cent of the cases. The recurrence is mostly tardy and local. A few writers be-

lieve that the recurrences are usually due to an incomplete removal of the tumor. A thorough eradication of the growth, however, is impossible in a part of the cases. The tumors are estimated to reappear usually after nineteen months to four years.

Metastases are infrequent, none seem to occur in the spheno-occipital group, probably because the destruction of some vitally important part of the central nervous system kills the individual before

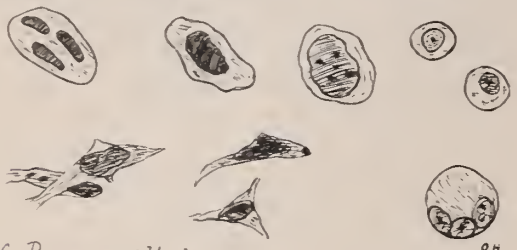


Fig 6 Drawing of the type of tumor cells found.

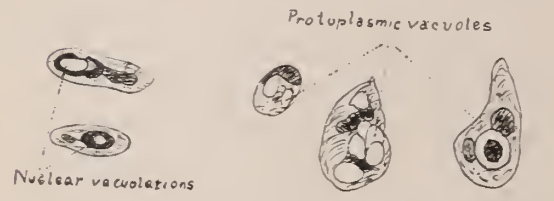


Fig 7. Drawing to illustrate the vacuolations of the tumor cells

the tumor becomes sufficiently advanced to produce metastases. A number of reported sacro-coccygeal chordomas showed metastases in the abdominal lymphnodes and in the peritoneum. Rarely metastases to the liver are reported. Stewart's first case developed a mass over the right scapula. In a case recently reported by Willis, extensive metastases were present in the lungs, spleen, kidneys, heart, thyroid and skin. It is stated that these metastases are probably due to invasion of the iliac veins by direct extension. While these tumors nearly always arise in the midline, a bulging toward one side or the other is not infrequently observed. The caudal tumors are usually of rounded or lobulated outline and well encapsulated. It is believed that this capsule ruptures in later stages of development. The tumor is usually described as a large gelatinous, firm mass, ramifying in and about the sacrum, invading the bone or attached to the sacral and coccygeal bones. A tumor the size of a child's head may be found and may bulge posteriorly over the buttocks or anteriorly into the pelvis or invade the bone and spread both ways. The spheno-occipital group of tumors are comparatively smaller. They arise at the clivus and frequently spread toward the base of the brain or may invade the spinal canal.

On section these tumors usually present a lobulated gelatinous appearance with dense fibrous septa running through the growth. The lobules suggest marked mucoid degeneration, together with opaque cellular parts and hemorrhagic areas which are both old and recent.

The tumors are most frequently observed between the ages of forty to sixty. They are exceptionally reported in the very old and very young. Spheno-occipital chordomas manifest themselves earlier than those of the caudal region. The latter are found more often in males than females, the reason being advanced that men are more subject to trauma by

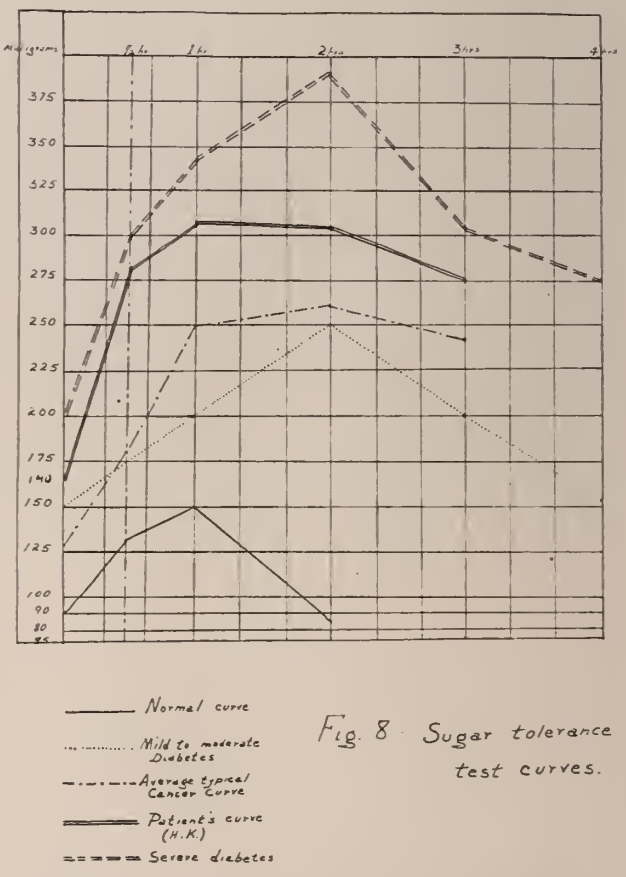


Fig. 8 Sugar tolerance test curves.

reason of their work. The factor of trauma in the production of these growths is uncertain but a large number of the reported caudal tumors gave a history of trauma. It seems a reasonable supposition that trauma may stimulate the onset of a growth or hasten one already growing.

The symptomatology varies with the location of the growth and size. The usual symptoms of the growths at the spheno-occipital region are: headaches, vomiting, dizziness, and disturbances of vision, due to increased intracranial pressure. Paralyses of various kinds may follow these symptoms as the tumor invades the nerve tracts. Dorsal or lumbar chordomas usually give rise to symptoms of compression of the cord, such as disturbances of the motor and sensory nerves of the trunk and extremities associated often with loss of the sphincter control. The symptoms of caudal tumors are pain while sitting or lying down. If the growth is

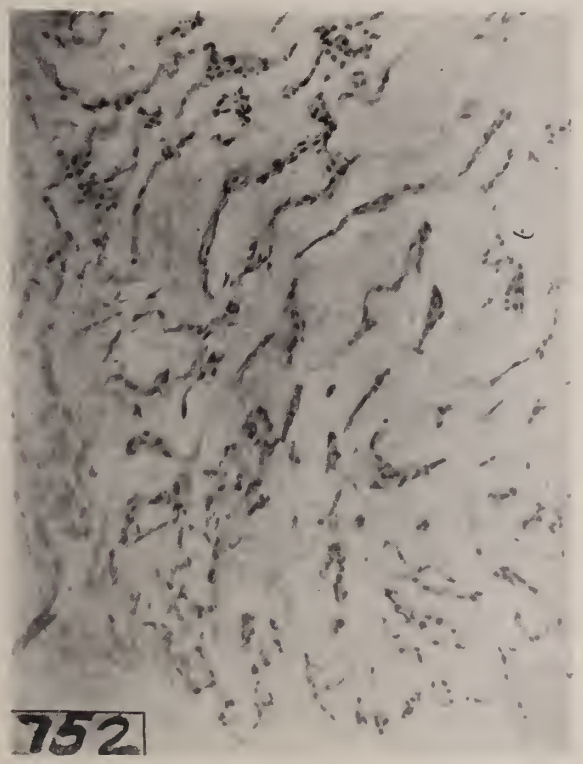


Fig. 9.—Low power view. Strands of tumor cells in mucoid matrix. The strands show an anastomosis here and there.

within the bone the pain is at the end of the spine or in between the buttocks. A tumor projecting anteriorly may interfere with the functions of the bladder or rectum. The sacral nerve roots may be involved and the pain referred along the sciatic nerve simulating a sciatica. The skin overlying these tumors is usually free and movable.

The diagnosis of chordomata is usually established only by biopsy of the removed growth. An X-ray showing a bony lesion may assist in establishing a comparatively early diagnosis. Andler (quoted by Montgomery and Wolman) states that the sacrum has a characteristic roentgenologic appearance with multiple circular or oval rarefied areas which give the bone a net-like reticular structure. A negative X-ray does not exclude chordoma. Mallory, in 1914, when only three cases were recorded, states that "chordoma is of much theoretical interest but has little practical significance." Today, however, because of the increased frequency with which these tumors are being reported, the diagnosis becomes of real practical significance.

The treatment of these tumors is essentially a surgical problem. The complete extirpation of the growth when possible is indicated. The tumors of the spheno-occipital region and the pharynx when the diagnosis is established are usually inoperable except to remove the pressure symptoms. The caudal group are more amenable to surgical removal, but here also the complete removal of the growth because of its invasive properties is rarely obtainable, and recurrences are frequent. More than one surgical attempt may be required during intervals of months to years to successfully ameliorate the symptoms. Radiation therapy, as in all types of malignancies, has been given a trial, but in this type of tumor has not been proven to be of distinct value. Concerning the type of radiation it is noted that deep roentgen-ray therapy has been mostly used in the recorded cases. Rarely a complete cure by any method is obtained.

The prognosis, therefore, is not good. The duration of life varies with the location of the growth, being longest in the caudal group where life extends over a period of years. The longest reported case is nineteen years from the time of the original diagnosis.

REPORT OF CASE

The patient, H. K., seventy-one years of age when admitted to the Marine Hospital, March 14, 1933. A retired Navy man, white, a native of Finland. Upon admission to the hospital he gave the following history: Married; four children living and well; one child died of pneumonia; family history not remarkable; gonorrhea and malaria many years ago and influenza at the age of sixty-seven. Four years ago he first noticed tenderness at the tip of the coccyx; this condition became gradually worse, but caused no great discomfort or alarm until recently. He is now unable to sleep com-

fortably on his back because of the pain that this position causes in his lower spine. He has a pressing full sensation in the rectum and when he feels the urge to go to stool he must do so promptly.

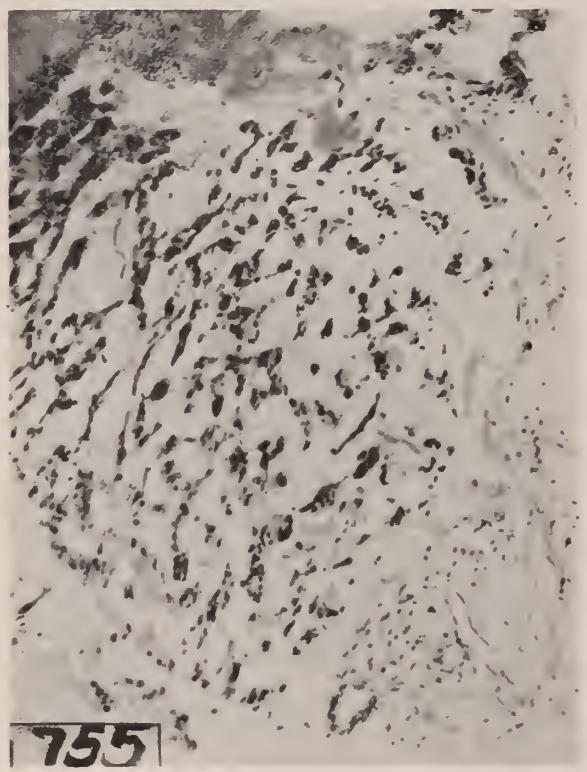


Fig. 10.—A nodule of tumor cells in connective tissue stroma. Mucinous secretions cause the small groups of tumor cells to dissociate from one another. A collection of red cells visible on top.

He at first denied ever having been injured in this region, but subsequently he has stated that about five years ago he fell and struck the lower end of the spine. This injury was at the time regarded as trivial.

Physical examination showed a well-developed, well-nourished adult white male, in good general condition, able to be up and around. He showed a marked deformity of the sacral region characterized by a bulging backward of the sacrum. On rectal examination a mass could be felt bulging forward from the sacrum. This mass felt about as large as a child's head, but the outlines could not be definitely made out. It was not movable and the internal mass appeared to be continuous with the sacrum and with the mass felt posteriorly. The mass palpated rather firm but not as firm as bone, rather of the feel about like a tense football.

The X-ray report upon admission was: "There is erosion of the lower portion of the sacrum on the anterior surface which is believed to be the point of origin of the tumor mass. Impression: Osteosarcoma." (Fig. 15 represents an X-ray of a year later.)

The urine was normal and blood Wassermann negative. The blood count indicated 5,000,000 red cells, 80 per cent hemoglobin, and 8,000 white corpuscles with 50 per cent neutrophiles, 34 per cent lymphocytes and 16 per cent monocytes. The relative increase of monocytes appears noteworthy.

After considerable discussion as to treatment an attempt at surgical removal was made on April 5, 1933; an incision was made in the midline over the bulging mass in the region of the sacrum and coccyx. The normal bone in this region was found to be

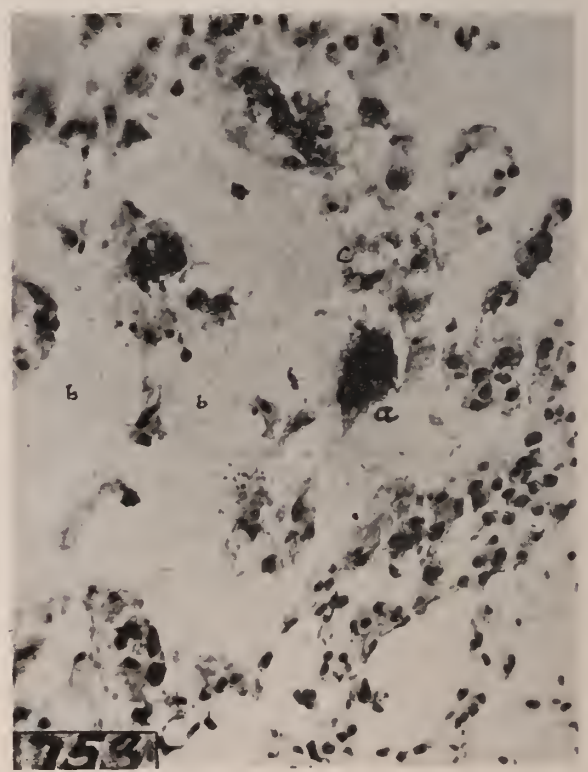


Fig. 11.—High magnification. Illustrates the variety in the size of the cells, multinuclear syncytial giant cells (a), extra cellular mucin (b), and vacuolations of tumor cells (c).

replaced by a soft friable mass which could be easily curetted out, even picked out with the fingers. On section of the growth it looked like the cut surface of a grapefruit with a sort of translucent color with septa running through the growth. In areas, varying in size from a pea to a walnut, there were

areas of hemorrhagic material of a chocolate color. The growth seemed to be very extensive. A huge cavity was excavated until it seemed that most of the sacrum and the supporting structure of the pelvis was removed. The nerve roots were exposed. There was no evidence of bone in the growth, the normal bone having been replaced as far as could be determined by this new growth. The growth extended laterally into the gluteal muscles. It was obviously very extensive and the complete removal seemed hopeless to attempt. Bleeding was quite profuse; therefore the cavity was packed and the operation completed. Following the operation, from April 24, 1933, to May 4, 1933, he was given nine X-ray treatments of 200 K. V. each.

Fig. 12.—High power view. Large hyperchromatic cells of varying size and shape. Mostly polygonal and ovoid. Cytoplasmic vacuoles are noticeable (a). Some connective tissue stroma.

The sugar tolerance following treatments, which was made on May 12, 1933, showed:

Fasting blood sugar of .140 per cent and a negative urine.

After glucose was given, the findings were as follows:

After one-half hour the blood sugar was .256 per cent. Urine—negative.

After one hour the blood sugar was .282 per cent. Urine—negative.

After two hours the blood sugar was .273 per cent. Urine—negative.

After three hours the blood sugar was .246 per cent. Urine—four plus for sugar.

His convalescence following the operation was uneventful. The wound filled in slowly by granulation tissue. He felt well generally and was free from pain. It was thought for a long time that enough of the tumor might have been removed surgically together with the roentgen treatments to effect a cure. He was discharged from the hospital on June 30, 1933. Soon after discharge there were evidences of recurrence of the growth in the sacrum.

In January, 1934, the patient was re-admitted to the hospital because of recurrence of the growth. He was complaining of pain over lower sacrum on sitting up or lying down.

Pre-operative examination indicated a large, indurated and immovable mass, diameter about ten inches, over the sacral region extending laterally over the ischial tuberosities. The mass was readily palpable through the rectum.

An operation for removal of the tumor was performed under ether anesthesia on January 8, 1934. It was found that the coccyx and a greater part of the sacrum was destroyed and replaced by a tumor mass which presented gelatinous and dense fibrous areas. Most of the tumor about the remains of the sacrum were excised and the wound packed with gauze. Considerable post-operative shock was present. Post-operative course was uneventful. He was discharged from the hospital on March 16, 1934, and has been reporting as an out-patient regularly since then. The wound has filled in by granulation. At the present time there is very little deformity in the region of the sacrum. He has, however, been failing in general health and it is not believed that he will live very much longer.

The tumor was first diagnosed myxochondrosarcoma. This diagnosis of sarcoma was confirmed by Dr. Ewing Taylor, of Stapleton, N. Y. When the tissues were sent to the National Institute of Health to be studied by them, Dr. R. D. Lillie reported the result of their study, and it was he who first suggested the diagnosis of chordoma. He writes:

"We feel quite confident that the tumor is actually a malignant chordoma, as the structure as

well as agreeing with that of chordoma was not quite right for either mucous carcinoma of rectal origin or myxochondrosarcoma."

Dr. W. E. MacCallum gave no definite opinion but found the diagnosis of chordoma as the most probable.

Fig. 13.—Low power view. It illustrates an area of connective tissue stroma, containing some of the more active groups of small ovoid or rounded tumor cells (a). Small collections of inflammatory cells can also be seen (b).

Dr. James Ewing agreed with the diagnosis of chordoma on the basis of a four-year history. "A gelatinous carcinoma metastatic to the sacrum could not exist for four years without there being clear indications of a primary growth."

We would outline the histological findings as follows:

The tumor obviously destroyed and replaced parts of the bones in the sacro-coccygeal region.

Sections suggest a few small structureless remains of bone.

Frequent large areas show a loss of structure and very much extravasation of blood. Considerable amount of rather pale connective tissue and some muscle fascicules could be made out.

This stroma encloses groups and masses of tumor cells and indicates frequent foci of various inflammatory cells.

In most nests of tumor cells these cells form numerous groups and slender trabeculations anastomosing here and there. Polychrome methylene blue staining indicates that the majority of the tumor cells are imbedded in a mucinous matrix and other large groups of cells are not related with such matrix.

Sections showed a tendency of the tumor cells and syncytial type groups of tumor cells to dissociate from one another owing to a secretion of mucinous character.

The mucinous matrix is coarsely vacuolar or homogenous at places, but mostly forms a reticulum of more or less delicate fibrillae, which may or may not be filled with fine granules of mucinoid matter.

Fig. 14.—High magnification. Hyper-chromatic groups of tumor cells embedded in a mucinous matrix. This matrix forms in the upper half some reticulum of rather delicate fibrillae filled with fine granular mucinoid matter.

Frequent tumor cells contain single or multiple protoplasmic vacuoles, giving to a few cells the appearance of a typical physaliphorous cell. No content can be demonstrated in most of these vacuoles, but other vacuolar spaces enclose small mucinoid particles.

Nuclear vacuolations can also be seen in occasional cells. (Fig. 7.)

The tumor cells indicate a pronounced variation of size and almost as much of variety of shape. They are of polygonal, ovoid, spindle or stellate shape. (Fig. 6.) The cells in the mucinous area have a degenerated appearance, are very large, poorly outlined, and often form multinucleated syncytial giant cells. They have hyperchromatic, large homogenous nuclei and frequently acidophil cytoplasms. Pyknotic cells are of rather common occurrence.

Fig. 15.—X-ray of the tumor taken after the recurrence, shows a large dense shadow about the size of an orange, borders not sharply demarcated. There are multiple dense bony shadows scattered over the entire surface of the tumor mass which has replaced the lower two-thirds of the sacrum.

The tumor cells of the more active groups are chiefly rounded or ovoid, contain considerably less deeply stained nuclei, which show well-defined structure and enclose one to two nucleoli.

At several places, these cells exhibit a mosaic work arrangement together with some bluish, condensed matrix, resembling an atypical cartilaginous tissue.

Mitotic figures are rare.

The walls of a few small blood vessels are invaded by tumor cells.

COMMENTS

The significant histological points indicating chordoma, which we find in our case, are:

(a) Considerable dense connective tissue stroma.

(b) Degeneration and hemorrhages.

(c) Mucinous matrix about groups of tumor cells.

(d) Characteristic vacuolations of tumor cells.

(e) Syncytial masses of tumor cells.

(f) Cell groups, broken up in slender trabeculae.

(g) Finally: Scarcity of mitotic figures. (See Figs. 9 to 14.)

However, we find in the sections from our case a few partial deviations from the reports of other cases reported.

The vacuolization of the cells is less extensive than it is usually reported.

A radial arrangement of the tumor cell groups was very vague.

A few parts of the sections showed resemblance to an atypical cartilaginous tissue. A similar finding was recorded in a case of notochordal tumor of the dorsal spin by A. Young and D. F. Cappell.[7]

It is thought that the walls of several blood vessels were weakened by invading tumor cells, which caused the extravasation of blood corpuscles.

It may be noteworthy that with the hematoxylin eosin staining the intracellular vacuoles remained inconspicuous, while polychrome methylene blue staining brought out these vacuoles remarkably well and aided the demonstration of the mucinous matrix. (Nuclei stained blue, mucin reddish brown.)

It may be noted that large polygonal cells, seen in some sections, suggest an entodermal origin, which favors chordoma.

Clinically, the location and slow growth of the tumor, as well as its intimate attachment to the sacrum and the absence of a tumor mass in any other part of the body supports the pathological diagnosis of chordoma. The malignancy was indicated by the invasive character and the recurrence of the tumor, also by the histological appearance of the tumor cells showing a pronounced variation in size, shape and depth of the staining.

It is interesting to note that the sugar tolerance test in this case presented a "cancer curve." (In place of the normal high peak of 160 mgr. after forty-five minutes, the blood sugar rises considerably higher and such level is maintained for two hours or beyond two hours, or it is even increased after two hours.) (Fig. 8.) According to Edwards,[8] the failure to establish this kind of curve is strong evidence against malignancy. The present case may be listed among the ones where the presence of the "cancer curve" is a suggestive and corroborative sign of an invasive tumor.

Specimens of the recurrent tumor were forwarded for examination to Drs. Charles F. Geschickter,

Johns Hopkins University; E. T. Bell, University of Minnesota; R. D. Lillie. National Institute of Health, and J. P. Simmons, Northwestern University. The report of each of these pathologists was: chordoma. Our own microscopical findings were essentially the same as outlined above. Nuclear vacuoles, however, occurred more frequently than in the original tumor. Nuclear vacuoles, according to Stewart, may be regarded as one of the signs indicating a malignant chordoma.[7]

Cappell[7] states that glycogen appears to be abundant in alcohol fixed parts of chordomata. Adson, A. W., and co-workers,[9] in reference to glycogen test by Best's carmine method in approximately thirteen cases, report the finding of red staining granules in the tumor cells. Considering that their tissue specimens were fixed in formaldehyde and glycogen is extremely soluble in water, they conclude that the granules are of non-specific nature, possibly paraglycogen or some allied substance.

Our findings with Best's carmine staining for glycogen were briefly as follows:

1. Absolute alcohol fixed paraffin sections presented frequent groups of tumor cells which contained cytoplasmic red homogenous substance or coarse red granules. No such reaction seemed to be present in the nuclei. The reaction was somewhat more pronounced in occasional areas which possessed a matrix resembling the intercellular substance of cartilage.

2. Sections, fixed in 10 per cent formalin, showed a few groups of tumor cells which contained in their cytoplasm spots of a red substance, not granular in character.

The foregoing findings indicate that the absolute alcohol fixed material contained a larger number and more characteristic substances giving a red reaction than the specimen fixed in formaldehyde. Therefore, it is our impression that a part of the tumor cells contained a fair amount of glycogen and also some allied substance, possibly paraglycogen. Both substances gave the reaction in the alcohol fixed material and the latter substance was suggested in the tissue fixed in formalin. For more conclusive findings it may be necessary to study parts of the tumor, embedded in celloidin.

Probably the amount of glycogen present in chordomas is quite variable.

Summary

A case of chordoma occurring in a man of seventy-one years of age is reported. The pathological findings are outlined in some detail.

A review of the embryology and characteristics of notochordal tumors are given.

A recurrence after a surgical attempt to extirpate the tumor has occurred at the end of one year, which is considerably earlier than usually reported.

The glucose tolerance test as applied in malignancies is presented.

Preliminary findings, believed to be significant, concerning the glycogen content of the tumor are reported.

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THROUGH FIFTY YEARS—1885-1935.*

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One who labors enthusiastically at a single calling for half a century is amazed at the rapidity of the passing years.

It was in the spring of 1883 that I began the study of medicine. From my early childhood I had had a great admiration for the doctors with whom I had come in contact. They had been men of refinement and education, men respected and loved by the entire community. As I grew older I reasoned out that medicine, because it is not an exact science, would afford for one engaged in its practice, something new and interesting continually, concerning the healing and making strong the bodies of men. These were probably the two important factors that induced me to take up the calling of Hippocrates.

I began my study under the preceptorship of our splendid old family physician, Dr. William A. Pearman, of Charles City County, Va. He was a graduate of Randolph-Macon College, where he received a classical education. He had graduated from the Medical College of Virginia in 1849. His field extended over the eastern part of Henrico County and a wide area of both Charles City and New Kent. He gave me words of encouragement, for which I am still grateful. Gentle, studious, trustworthy, and capable, he made no loud declarations of his morality, but he had faith in the goodness, the power and wisdom of his Creator. From him I learned the principle that to keep abreast of the times the doctor must retain his mental acumen and acquaint himself, as well as he can, with the latest improvements as they arrive. He it was who instilled it in me that a doctor owes it not only to himself, but to his patients to keep up with the times.

I entered the Medical College of Virginia in the autumn of 1883, with what was stated to be the largest number of matriculates since the time when Dr. Hunter McGuire had brought down from Philadelphia more than one hundred students, just prior to the War between the States.

Attendance upon the lectures for two sessions of six months each was required; then an examination, approved by every member of the faculty, secured the applicant his diploma.

Among the professors of my first year were Drs. Robert T. Coleman and James B. McCaw. Dr. Coleman filled the chair of Obstetrics. He was a marvelous instructor, his lectures were informing and delivered with great earnestness and dignity. We honored him, but before the end of the term he died.

Dr. McCaw had already been a member of the faculty for years. He was a big, fine, handsome man, dignified, cultured, and a highly gifted teacher. His lectures on the Practice of Medicine elicited the interest of his class, and we counted it a privilege to have enjoyed the valuable lessons from so good and great a man. As a child I had had occasion to pay frequent visits to Chimborazo Hospital, planned and operated by Dr. McCaw.

An outbreak of smallpox in the community had resulted in my being sent to the temporary home of my uncle, at that time Chaplain in the Confederate Army, who was living with his young wife near the hospital. After the cessation of hostilities, I frequently heard him speak in euthusiastic terms of the ability and other fine qualities of Dr. McCaw.

Up to the year 1884 there had been more or less difficulty in securing material for dissection. Old Billy and Chris, the janitors, were arrested and jailed on several occasions for body snatching. Finally the General Assembly in 1884 passed a bill by which the State agreed to furnish the colleges of the State with all the bodies needed for scientific purposes.

Clinics were held at the college, the almshouse, and the penitentiary. We attended many surgical operations, but most of them compared with those of this day, were of minor importance. We witnessed only one thigh amputation, performed by Dr. Cullen. It was reported that the patient recovered. We also saw one arm removed at the shoulder. At that major operation we noticed the presence of several prominent surgeons of Rich-

*Read before the Roanoke Academy of Medicine, May 13, 1935.

mond. We did not see a single abdomen opened. Such an operation almost invariably resulted in the speedy death of the patient. We failed to see a surgeon wash his hands or cleanse the operative area before proceeding with the operation. Afterwards he used both soap and water on his hands and arms.

The fourth edition of Bryant's Practice of Surgery was our textbook. It was published in 1883 and has long since been discarded. The idea of germs, asepsis and antisepsis was just beginning to be entertained. During an operation in the amphitheatre near the Egyptian Building, we observed a tea-kettle boiling on a diminutive oil stove and sending out steam with a faint odor of carbolic acid. The value of the vapor that reached the incision was probably negative in quantity from the standpoint of antisepsis.

Just before the administration of chloroform, it was the common practice to have the patient imbibe a stiff drink of whiskey, whether that the patient might at least die happy if the operation should not prove a success, or to cheer and encourage him somewhat for the coming ordeal, I can't say. At least, it appeared to us to be the only part of the performance that the patient enjoyed. At that time throughout the South chloroform was almost exclusively used as the general anesthetic, while in the North ether was considered the safer. It was during this time that Dr. Charles M. Shields, lecturer on diseases of the eye, ear and throat, obtained some of a new drug that was just appearing for local anesthesia. It was called cocaine.

The fine lectures on Obstetrics we heard from Drs. Coleman and Christopher Tompkins, and the study of Tyler Smith's textbook on Obstetrics gave us a fair knowledge of the subject. But we had little experience in the treating of parturients. One afternoon I was invited to go with a classmate, W. G. Belt, to help in the delivery of a young colored woman. The labor proved to be a normal one, and we were both very proud and happy at our success, and at the thrill it gave us. This was the only delivery I witnessed while attending college. I did observe the late Dr. Junius E. Warinner, Sr., remove a placenta that had already left the uterus, and was lying loosely near the outlet of the birth canal.

The School of Dentistry had not yet been established, and on going out to practice we were often embarrassed at the awkwardness and frequent failures we made when trying to extract roots and molars for country people.

On the second day of April, 1885, exactly fifty years ago, diplomas were awarded the graduating class. We sat on the stage of the old Richmond Theatre where the exercises were held. The class roll was as follows:

R. R. Ball	W. H. Harrel
J. W. Bolen	I. W. Kite
S. W. D. Brewer	D. A. Kuyk
T. P. Darracott	A. A. Leftwich
J. G. Davis, Jr.	E. C. Macon
A. C. Fisher	W. H. F. Miller
R. H. Garthright	E. W. Morris, Jr.

W. L. Williams

Graduates in Pharmacy were W. M. Anderson and William H. Nelson.

The following gentlemen composed the faculty:

Martin L. James, Dean and Professor of the Practice of Medicine.

George Ben Johnston, Anatomy.

J. S. D. Cullen, Surgery.

J. N. Upshur, Materia Medica, and Therapeutics.

J. S. Wellford, Women and Children.

Christopher Tompkins, Obstetrics.

H. H. Levy, Physiology and Pathology.

William H. Taylor, Chemistry, Toxicology and Medical Jurisprudence.

All of these have since died.

The first meeting of the Board of Medical Examiners, organized November, 1884, was held in the Hall of the House of Delegates April 8, 1885. Every applicant was required to hold a diploma from a reputable medical college. At that meeting there were twenty-five applicants, and six of them failed. At the meeting on April 5, 1887, of the nineteen who applied, seven failed. Criticism of the Board through the papers, and fiery discussions in the Legislature occurred, but at length the Governor signed an amendment to the bill, which was rather stronger than the first one. Up to 1889, 243 had been examined, and 48 per cent had failed.

To show the need at that time of protecting the people from ignorant practitioners, I quote from an article by Dr. William C. Dabney: "It is perhaps not generally known that Virginia is one of the

few states in the Union which permits anyone to practice within her borders without undergoing a preliminary examination. * * * No education, whether medical or general is required: it is not even necessary that the applicant for practice shall be able to read or write, and there are some so-called physicians in the State who can hardly write their own names." (Quoted, *Medicine in Virginia in the Nineteenth Century*). And, again, from the same volume: "The first training school for nurses in Virginia was established at St. Luke's Hospital, Richmond, Va., in 1886. Two others had already been organized in the South, one in New Orleans, and the other in Charleston, S. C."

The first two nephrectomies in Virginia were performed by Dr. George Ben Johnston.

Forty years ago the death toll in Virginia from typhoid was dreadful. You know, of course, that during the Spanish-American War the sanitary conditions existing in the camps carried off many soldiers, because doctors had not learned the cause of the contagion. Observations from thinkers and writers of the laity brought out wise and sane suggestions. It was a distinguished editor who, by his observation that "men in the Navy that drank only distilled water never contracted typhoid fever," gave one of the first directions to finding the etiology of the disease.

The City of Roanoke in 1889 contained a population approximating 10,000, with about twelve or fifteen doctors. A disease, quite prevalent in this section, and termed "Lick Fever" by both the laity and doctors, and frequently diagnosed as malaria, proved to be typhoid. The mortality from this disease throughout the ensuing decade was high. At that time Virginia cities and towns were without sewerage systems. Closets were wide open, and over foul smelling refuse back in the alleys swarms of flies crawled, then winged their way through unscreened doors and windows into dining-rooms, sharing the bread, leaving their marks on the butter, and then taking baths in the crocks of milk so kindly left open for them by the housewives. The flies, of course, have always left as a token of their appreciation, some few billion germs. The old tradition of Virginia hospitality could certainly not be gainsaid by the flies. Springs and open wells supplied the families with drinking water; schools, churches, courthouses, trains and prisons all drank this water from the democratic common drinking cup.

Roanoke in those days had no hospital, no way to take blood counts, there were no Wassermanns, no accurate way of obtaining the blood pressure, and of course it goes without saying that basal metabolism tests were yet to come. The use of hypodermoclysis had begun, but no blood transfusions were ever given, and even though the microscope revealed the presence of the bacilli of diphtheria, and antitoxin could be obtained and was used, yet the disease went on carrying off the children, because the newly discovered remedy was given in doses too small to combat its toxins.

Malaria, which had burned and shaken to pieces the bodies of Captain John Smith's followers, was still rampant along the coastal plains, and even yet has not been completely exterminated. Again a wise and observing layman indicated the way to conquering this disease. On a Virginia plantation before the War between the States, the owner of many slaves, dominated by the delusion that autumnal fevers were contracted by inhaling the night air laden, as they thought, with deadly miasma from the low grounds, ordered the slaves to be kept closely confined in their cottages at night, the doors and all openings fastened so as to exclude the entrance of the night air. The inhabitants of those cottages were never afflicted with attacks of intermittent or other forms of malaria. The mosquitoes, of course, were never noticed.

Health conditions were deplorable in the cities, towns and rural communities. No efficient boards of health had as yet been organized. Finally the Legislature was induced to make an annual appropriation of the unheard of sum of $5,000 to be used over the entire State for health purposes. It was then that God raised up a man and sent him out to labor in His field. You don't have to be told his name. Every one here knows what the name Ennion Williams means in the health annals of Virginia; but, alas! "His sun went down while it was yet day."

It was for years after I began my practice that the physicians did not know anything of the etiology of pellagra, diabetes and other maladies, which today we take so much for granted. You must remember that since then the dangerous hookworm has been run down and about eliminated; radium and the X-ray have come to make plain internal disturbances, to modify and frequently cure morbid

conditions which, when I first started out, were hopeless from the beginning.

Efficient health boards, now working in every section to render immune the young and old from the danger of acquiring communicable diseases, were undreamed of in our days.

In 1889, Dr. John F. Winn, of Richmond, in an editorial appearing in his journal, *Practice,* stated: "The opinion is gaining ground that perityphlitis (now termed appendicitis) is a condition requiring surgical measures in a large number of instances." It was well in the nineties before men began rightly to understand the diagnosis and management of appendicitis. A few advocated its removal as soon as the diagnosis was made plain, but many gave salines and other drastic purgatives and usually postponed surgical interference until rupture and general peritonitis had set in; some doctors would then operate and tightly sew up the incision, using no drainage whatever, and of course the patient usually died. Afterwards the idea began to grow among the surgeons that it was imperative to remove the appendix immediately following the diagnosis, and if rupture had occurred and pus formed in the abdomen, free drainage was employed. And so the mortality rate from appendicitis began to be lowered.

Tuberculosis, as old as civilization, was working away at the same old grandstand and playing the leading role as the villain in the human drama, but already Robert Koch had identified the germ and Trudeau was making that great fight to regain his health in the woods around Saranac. Rumor with her thousand tongues was bringing from the North whispers of the miracle going on in that little cottage up there, now so world-famous, but the realization of that hope was yet to come. You who are young and take pneumothorax and pneumonectomy and lobectomy for granted, cannot realize the wonder we older men still feel at these miracles and the feeling we have every day that we ought to thank the good Lord for such a man as Robert Koch.

The dramatic story of the conquering of yellow fever, which you have known ever since you read your first hygiene, is an old story to you, but to us who had the thrill of living during those days, it is ever new, and we feel that we want to go down by the blue waters of the Chesapeake, and stand with uncovered heads at the little house by the side of the road where dwelt that great friend of man, and thank God for the gift of Walter Reed. He was born in a Methodist parsonage. His father, whom I knew, was a peer among preachers. His two brothers occupied prominent positions in life, one as a judge of the Eighteenth Judicial District of Kansas, the other a Confederate soldier at 18, who lost an arm at Sharpsburg, returned to the army and surrendered at Appomattox. Then he became a prominent and beloved gospel preacher, and three months ago "went to his grave in a full age (92) like as a ripe shock of corn cometh in his season." This father and his three sons were all of philanthropic and heroic build.

I have seen the good accomplished through medical, surgical, and sanitary measures for the health and comfort of the race of man during this past half century, which has exceeded that of any other similar period in the history of mankind, and I am thankful that I have had the privilege of witnessing this progress.

The new method of treating fractures of the hip "by inserting an instrument of fixation through a small incision over the trochanter holds the fracture firmly together," and is proving a boon to victims of this accident. It is of indescribable comfort to the aged and feeble, whose lives are endangered when kept flat upon their backs in bed under the use of plaster casts and heavy weights. Within twenty-four hours following the new operation, the patient is able to be up in a rolling chair, and a little later, walking about with the aid of crutches. To the old it is indeed a life saver.

"This operation was devised by Dr. H. H. Wescott, of Roanoke, Va. At about the same time he was perfecting his method, Dr. Sven Johansson, of Gottenburg, Sweden, and Dr. T. King, of Australia, were devising similar methods without the knowledge of the other's work, which would produce more or less the same result. Though this same operation has been attempted time and again, it is only recently that it has been perfected and may be used routinely in all fractures of the hip. It is gradually replacing other methods which existed in the past." Dr. Wescott says, "Possibly you would be interested in the newer treatment for infections of the joint—radical incision, leaving the joint wide open and instituting immediate active use. In acute infectious joints that do not show bruise, drawing off

the fluid is now done and air is injected to keep the membranes separated, resulting in freely movable joints which would otherwise have been ankylosed and stiff. In tuberculosis of joints, we anticipate nature and fuse the joint together, rehabilitating the case within a very few months, where nature would take years to produce the same effect."

Splendid results are daily in evidence from modern brain surgery. Vast numbers of children are kept from total blindness by the instillation of a solution of silver nitrate immediately following their births.

I could go on indefinitely repeating the signal victories won by doctors, scientists and surgeons in this time; how Reginald Fitz, a Bostonian, made plain the diagnosis of appendicitis; how, in 1886, R. J. Hall removed an appendix for the first time; or I might recall John Murphy, of the Mayo Brothers, or Howard Kelly, or Louis Pasteur, but your textbooks are replete with stories of these men.

Very little surgery was done on the liver and other internal organs prior to the beginning of the twentieth century. Hugh Taylor and George Ben Johnston both reported the surgical treatment of cholelithiasis in 1895. In 1897 George Ben Johnston reported his experience with hepatic abscess; Charles Cannaday performed a lateral anastomosis of the ileum and colon for obstruction in 1897. Earlier still, in 1888, Lewis G. Pedigo discovered and published that amyl nitrite is the antidote for cyanide poisoning.

The third volume of *Medicine in Virginia (in the Seventeenth, Eighteenth and Nineteenth Centuries)* has recently been published. These volumes describe in detail the activities of the doctors working in the State from the Colonial period to the close of the nineteenth century. Dr. W. B. Blanton, the editor, with Drs. Beverley Tucker and Frederick Rinker, of the committee, has given us this valuable work. For furthering the idea and pushing it to its successful conclusion, we are indebted to our esteemed friend and neighbor, Dr. J. W. Preston. You will find the work most fascinating, and I believe it should be in the library of all Virginia doctors.

It was in 1889, when Roanoke was young, that the Medical Society of Virginia met in this city. Every section of the State was represented. At that meeting Dr. Oscar Wiley, of Salem, was elected president. Roanoke doctors who have since held that office were: Dr. Joseph A. Gale, Dr. E. T. Brady, and Dr. J. W. Preston.

During the past fifty years, our country has been twice at war. The two afford a sharp contrast in methods of sanitation. In the Spanish-American War the lack of proper sanitation caused the death of more soldiers than all the bullets. The World War showed how very far we had come along the road of progress. The use of the sera both as preventives and as cures, and the advances in surgery, make them old stories to you now; they brought back many a soldier who else would now be sleeping in Flanders Field. The only good that seemed to come from the war, if any good thing can be said to have come from it, was the great progress in medicine.

Of course, I have time only to mention the wonderful feats in surgery of the brain, the sympathetic nervous system, pneumonectomy, and peripheral vascular diseases. Though we are still looking with hope for the solution of the cancer problem, I have infinite faith that it will come.

We older men who have passed the meridian of life can testify to the blessing of that special surgical feat that Charles Mayo calls one of the great achievements of the last ten years—the trans-urethral prostatic resection. To those of us who have needed it and received it, it will be the means of prolonging our years beyond the proverbial threescore and ten, making our old age like unto Shakespeare's Oliver, "frosty, but kindly."

It is the characteristic of men who have reached my age, to love to go back in the past and dwell lovingly over the memories of the days gone by. Bear with me just a few minutes longer while I recall that forty-six of these years have been spent in this vicinity. I became a member of the Medical Society of Roanoke shortly after its organization. It flourished for a while, then almost died, but finally came back to life, the membership increased, interest revived, and now we are working under the more dignified and classic appellation of The Roanoke Academy of Medicine.

Mingling among you in these meetings and out in the field, as occasion permitted, has been of profit and a perennial source of delight to me. Several times I have had to undergo medical and surgical

treatments in the hospitals, when you have remembered me very kindly. Your visits and cards of sympathy, your words of encouragement, and the aroma of the lovely flowers cheered and comforted me, for which I thank you sincerely.

These were a very wonderfully short fifty years that I have spent, and I can honestly say with Rabbi Ben Ezra, "Grow old along with me, the best is yet to be"; for I have witnessed those things that we deemed impossibilities fifty years ago become realities, and I have infinite faith that the things we deem impossibilities tonight will be the realities of tomorrow. With men it is impossible, but with God all things are possible.

SPONTANEOUS FISTULAE OF LARYNX—CASE REPORT.*

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Laryngeal fistulae are not recorded frequently in the literature. The preponderance of those recorded are of traumatic origin, mostly from attempted suicide in which the cartilaginous laryngeal walls were opened and the victim's life saved by missing the great vessels in the neck. This type of case will not be considered here, though it is interesting to note that, in 1873, D. H. Agnew describes a plastic operation for the closure of such a fistula. In 1886, Moolchand describes a similar procedure with favorable results obtained by each author.

No case of spontaneous laryngeal fistula was found in the literature of the past few years. Several are reported in the latter half of the nineteenth century, most of which are of tuberculous origin. Krieg reports very exhaustively in 1878 a case of "Spontaneous Fistula of the Larynx in Tubercular Laryngeal Perichondritis." This patient was fairly riddled with tuberculosis and she had multiple draining sinuses, two of which communicated with the larynx, as shown by the autopsy. However, during life, air passed in and out through these fistulae with ordinary respirations, with what the author terms, "hissing and gurgling sounds." Krieg also describes briefly three other cases that he found in the literature up to that time. The first was observed by Andral in the Charite Hospital in the summer of 1817. This was in a man with advanced tuberculosis. Air passed in and out through the fistula for a year and the size of the aperture remained the same. An autopsy showed the fistulous opening in the larynx to be a little above the anterior commissure of the false vocal cords. This accounted for the preservation of the voice during life. Andral states that this was the only case of this kind observed in more than 2,000 phthisis cases which passed through the Charite.

Krieg also refers to the case reported by Oppolzer in 1844. This also was a case of advanced laryngeal tuberculosis and the patient died three months after the fistula opened. The patient was at the point of death from asphyxiation from a laryngeal abscess. It ruptured spontaneously, producing the fistula, the patient living fairly comfortably for three months thereafter.

The third case referred to by Krieg was reported by Gunther. This was in a man, forty-eight years of age, who was a heavy drinker. A large fragment of the cricoid and thyroid cartilages was found to be ossified and exposed. A small fistula developed through the crico-thyroid membrane, allowing the passage of air in and out on respiration without pain. The fistula healed as a result of "industrious swabbing with nitric acid."

P. Thornton reported in 1883 a case of a woman aged thirty-seven who had carried a laryngeal fistula for several years. It developed following a large swelling in the neck, which she thought came from a cold. The swelling was incised and this fistula developed. The patient went from doctor to doctor in America and Europe and was treated in various ways. She wore some type of canula through the fistula for about a year. Plastic surgery was tried but failed to effect a permanent cure. The author devised a small needle which would pass to the end of the fistula, and, on repeated electrolytic treatments of increasing power, a cure was effected.

*Read before the Virginia Society of Oto-Laryngology and Ophthalmology, at Fredericksburg, Va., May 4, 1935.

The patient remained well until last seen three years afterward.

E. H. Bennett, in 1888, reported a case of laryngeal fistula which developed from what seemed to be lupoid ulcerations of the anterior neck. Antiseptic and tonic treatment was used at first with healing of ulcerations, but the fistula remained patent. This patient had no signs of lupus elsewhere, nor any signs of tuberculosis in any form. Also, he states, there was no evidence of syphilitic taint. This woman developed a very severe case of erysipelas which wandered over the face, neck and upper body. She was very sick for a time. After that she improved rapidly and the fistula completely healed. The author states that this healing, following erysipelas, served to strengthen his view that this was a case of lupus.

CASE REPORT

On October 1, 1931, an aged colored man (about sixty years of age) was brought into the office by his family doctor. He was in very great distress and had an old handkerchief tied around his neck. His breathing was very noisy and, on examination, it was noted that he was breathing through a fistulous opening into his larynx through the upper anterior lip of the thyroid cartilage. There was much secondary infection and a large submental gland was discharging into the immediate vicinity of the fistulous opening. The opening was almost as large as a lead pencil, and a probe passed easily into the upper larynx. With each expiration there was a spray of pus and some was sucked into the trachea with each inspiration. There was a large, hard, indurated mass in the upper cervical region. It was about the size of the fist, and there was an ulceration about the size of a dime on the right side of the neck. The glands in the upper left cervical region were enlarged and indurated. The tissue along the anterior surface of the neck was also indurated.

Present Illness: First noticed trouble with neck about fourteen months ago as a little lump on right side of neck. This became very much larger, and finally ruptured when it was about the size of an orange. It would break down repeatedly. No trouble with left side. Swelling noticed over thyroid cartilage about five weeks ago. This enlarged, then finally suppurated and ruptured through when he scratched it.

Past History: Had some kidney trouble two or three years ago. No edema, no shortness of breath. Had trouble with blood about thirty-five years ago and was given medicine by mouth. Had treatments in arm about seven years ago which gave very severe reactions. This was apparently a typhoid prophylactic inoculation.

Family History: Married. One child died as infant. Three brothers. One died of asthma. Causes of death of other two unknown.

Physical Examination: Heart, lungs and kidneys were found, by his family doctor, to be in excellent condition for a man of his age. Urinalysis—negative. Wassermann—four plus.

Diagnosis: Spontaneous laryngeal fistula, probably of luetic origin, with secondary pyogenic infection.

This was a most unusual case, and there was no precedent to follow as I had never heard of a similar case. Here was a man breathing through an infected fistulous tract with every reason to expect a lung complication at any time. It was hard to see how such a condition would improve with the continual flow of pus and air through it. Also, he was breathing with difficulty and was becoming somewhat exhausted. I considered it wise to do a low tracheotomy, rest the part, give general and local treatment for his syphilis, and hope that his fistula would heal.

Operative Technique: Local anesthesia, using 1 per cent novocaine. Incision was made in mid-line of neck, beginning at the cricoid cartilage and ending just above the suprasternal notch. Dissected down on trachea by combination of blunt and sharp dissection. Whole area was indurated and the trachea was displaced somewhat to the left. There were many dense adhesions along the trachea. The trachea was opened and tube inserted.

Hospital Progress: Patient was breathing quietly after operation, except for an occasional spasm of coughing and clearing the trachea of mucus and a a little blood.

November 3, 1931.—Temperature jumped to 102 degrees. Patient fairly comfortable. There was a large amount of pus from the upper infection. The fistulous opening was cleaned well and treated with mercurochrome. He was getting potassium iodide by mouth. Tracheotomy wound dressed and tube cleaned.

November 4.—Peak of temperature 101.6 degrees

today. Local antiseptic treatment to neck. Wound dressed and tubes cleaned. Nurses took very good care of this man. He was cooperative, which probably accounts for his recovery. His general condition was better and he wanted to sit up. Allowed up for a short while.

November 5.—Greatly improved except for much pus in fistulous opening. Tracheotomy wound is secondarily infected. Wounds cleaned and treated locally. Temperature 100.2.

November 6.—Patient in excellent mood and wants to smoke. Much infection about neck, but no signs of lung complications as yet.

November 7.—Patient feels better. Fistulous opening is closing rapidly, and infection about it is less. Tracheotomy wound infected and much pus. Kept as clean as possible.

November 8.—Temperature normal. Condition improved. Some sloughing tissue removed from tracheotomy wound. Cleaned and dressed.

November 10.—Temperature normal. Wound looks better.

November 13.—General improvement in all ways. Pus less, and fistulous opening closing rapidly. Still takes potassium iodide three times a day. Temperature has remained normal. Feels good and has the run of the hospital.

November 16.—Continues to improve. Tracheotomy wound much cleaner. Fistulous opening very small.

November 19.—This patient had learned to take care of his tube and was in a very good general condition, so was discharged in a much improved condition on this date.

Follow-Up Notes: November 20.—Seen and dressed in office. Feels fine and talks a little as tube is small. Fistula about closed.

Seen in the office on November 21, 22, 23, 24. Fistula closed, and a smaller tube inserted so that he breathed a great deal through his mouth. He could breathe fairly well even with the tube stoppered up. The tube was removed on November 25 and he breathed comfortably through the larynx, and there was no escape of air through the old opening. He was seen intermittently after this, and in about a week the tracheal opening had entirely healed. The general treatment was supervised by his family doctor, so that he improved both generally and locally. He felt better than he had for years.

I observed this man for six months. He worked daily and had no recurrence. About six months ago I saw his boss and he said that the old man was still actively at work on the water front. He does not come back to see me, as I spoke to him about having his larynx after he died, and that was the last time I saw him.

Conclusions

It is interesting to note the rarity of laryngeal fistulae, especially since the turn of the century; also the fact that no case of a syphilitic fistula is found recorded. The diversified method of treatment would indicate that each case is a problem in itself. The use of tracheotomy in the treatment of this condition was not found in the records of any other case.

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STERILITY FROM THE STANDPOINT OF THE FEMALE.*

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To procreate, healthy spermatozoa must come in contact with a normal ovum in the upper part of the genital tract or in the peritoneal cavity in the neighborhood of the ovary. Furthermore, the fertilized ovum must become implanted on uterine mucosa that has been properly prepared for it by a well-balanced hormonal action, where it can grow and develop, at least, to the time that it is viable.

*Read as part of a symposium on Sterility before the Richmond Academy of Medicine, June 11, 1935.

Anything that interferes with this train of events produces sterility. The problem, therefore, is a complicated one and may involve any branch of medicine from anatomy to endocrinology. It can be approached in a number of different ways. To-night I propose to present an analysis of 294 cases in which the chief complaint was that of sterility. I have applied no time limit to the sterility, but have included all cases in which the patient has complained of being unable to conceive. For the same reason I have not included the cases of habitual abortion, although they rightly belong here. These patients complain of abortion and not of sterility, and I have not had the time to get out my histories of such patients, nor would I have time to discuss that phase of my subject in time allotted to me.

Two hundred and ninety patients were white and four were colored. It is advisable to divide the cases into two groups: primary, in which the patient has never conceived, and, secondary, in which the patient has been pregnant at least once, even if it were only an abortion. One hundred and ninety-five of my patients fall into the first group and ninety-nine into the second. The average age of the patients with primary sterility was 29.15 years, the extremes being 19 and 43 years. The average age of those complaining of secondary sterility was 31.39 years, the extremes being 21 and 48 years. One hundred and two of the two groups gave the history of normal menstruation. In eighteen the type of menstruation is not stated. The chief variation from normal was pain in 109 cases, irregularity in eleven, scanty flow in six, increased flow in three, irregular in eleven, late in starting in fifteen, and early onset in thirty.

The salient features in the past history of these patients are shown in Table I. Forty-five patients had had stem pessaries or one or more curettements. In several instances as many as three curettements had been performed. Twenty-four had been subjected to uterine suspensions. In two a bilateral salpingectomy had been done. Almost one-third had had their appendices removed. This is slightly more frequent than I find in my patients at large—28 per cent of whom give a history of abdominal operation. One patient gave the history of a gonorrhoeal infection when an infant. Twenty-one gave the history of cystitis or pyelitis. Only one gave a definite history of pelvic infection and one a history of infection of Bartholin's glands.

TABLE I

PRIMARY AND SECONDARY STERILITY (293 CASES)

PAST HISTORY

45	D. & C. stem pessary, etc.
62	Appendectomy
2	Appendectomy and gall-bladder operation
19	Appendectomy and suspension
4	Appendectomy and partial oöphorectomy
4	Appendectomy and salpingectomy
2	Salpingectomy
1	Salpingectomy and partial oöphorectomy
3	Uterine suspension and partial oöphorectomy
2	Uterine suspension (24 counting those done with other operations)
2	Ectopic pregnancy
1	Fibroids
1	Gastro-enterostomy
1	Laparotomy
2	Thyroidectomy
1	Stone in ureter
12	Pyelitis
9	Cystitis
7	Arthritis
1	Pelvic infection
1	Bartholin gland abscess
1	G C when an infant
1	Recent mumps

The findings upon pelvic examination are shown in Table II. As might be expected the percentage of retroverted uteri was greater in the secondary sterility cases. The two cases of occluded vaginae are naturally found in the primary group. In countries like China where *cicatricial* stenosis of the vagina is often produced to cure uterine prolapse the picture would be different.

TABLE II

PHYSICAL EXAMINATION

	Primary Sterility (195 cases)	*Secondary Sterility (99 cases)*
Anteflexed uterus	129	61
Retroflexed uterus	52	31
Not stated	11	7
Occluded vagina	2	0
Stenosed cervix from cauterization	1	0

TREATMENT

My general plan of treatment has been, in those cases in which the history and physical examination gave no clue, to do a Huhner test. If this proved satisfactory, I next investigated the patency of the Fallopian tubes. The patients who pass this test are given a metabolism test. The patients who pass these tests without giving any clues that might serve in solving the problem, are considered from the standpoint of vitamin deficiency, anterior pituitary deficiency, or are treated along hygienic lines. The advantage of proceeding thus step by step is that it helps to evaluate the various etiological factors. The disadvantage is that it consumes more time and

some patients become discouraged before all the tests are completed.

My results in treatment of primary sterility may be summarized as follows: Of the 195 patients, thirty-five did not return after the first examination. Four of these had a cervicitis and one atresia of the vagina. Two cases were treated for syphilis and both became pregnant. One of these, a colored woman whose husband's first wife had a syphilitic child, had no other treatment. The other patient while getting treatment for her syphilis had also a Rubin test. Her tubes were found to be partially closed. She became pregnant shortly after the tube inflation, and I cannot say whether the tube condition or the syphilitic infection was the prime factor in her case. One case of constriction of the vagina (congenital) was treated and when this was cured the patient failed to return for further study. One case of intramural fibroid also seemed to be satisfied to let well enough alone when the fibroid was removed. One case of submucous fibroid was delivered of the fibroid *per vaginam*. She did not return for further treatment. One case of salpingitis stopped treatment when the inflammatory condition subsided. Four cases of secondary anemia were treated. Two became pregnant and went to term. One is now under treatment, and one stopped treatment.

This brings us to the more specific forms of treatment. Fifty-six cases of cervicitis were treated. Twenty became pregnant, and of these fifteen went to term, one had an ectopic, two aborted, one is now pregnant, and one was lost sight of after she became pregnant. Two patients are still under treatment, eight stopped treatment when the cervicitis was cured, and twenty-two went on with the sterility treatment.

Thirty-seven, thirty-six of whom had a retroversion, were treated by pessary, posture and exercise. Six became pregnant. Five went to term and one aborted. One pursued the sterility treatment no further.

A Huhner test was done forty-seven times. Thirty-one were positive, thirteen were negative. In three cases a few spermatozoa were found. It is interesting to note that one patient with a doubtful and two with a negative test became pregnant. The husbands of the patients with the doubtful and negative tests were referred to a genito-urinary specialist, but I wish to emphasize that one should be guarded in one's prognosis in such cases.

Under the head of Rubin test, I have grouped those cases in which tube inflation or salpingography was done. Some patients had both tests. In the doubtful and negative cases the tests were repeated many times. In this connection I would like to state that I have seen no ill effects from either the carbon dioxide gas or the lipiodol. I have been careful, however, not to perform these tests when there is the least suspicion of any inflammatory condition. When the tubes are open the gas causes more pain than the oil. When the Rubin test is negative, it is advisable to do a salpingography in order to visualize the obstruction. In two of many cases in which the Rubin test was repeatedly negative, salpingography showed no fluid entering the uterus. It was necessary to anesthetize these patients and to dilate the internal os before I could demonstrate the true condition of affairs. I introduced a small mushroom catheter into the uterus and then injected lipiodol. The tubes were found to be patent, and the oil entered the peritoneal cavity freely.

Eighty-eight patients were tested. Thirty-nine were positive. Ten of these became pregnant. Three went to term. One aborted and subsequently had a full-term baby. Another aborted and as yet has not become pregnant. Five are now pregnant. Fourteen patients stopped treatment after the tubes were found to be patent.

Twenty-two patients showed partial closure of the tubes. Eleven of these became pregnant. Seven have gone to term and four are now pregnant. Nine pursued treatment no further. One is still being treated for the tube condition, and two continued to the next stage in the treatment.

Twenty-seven were negative. Four patients became pregnant, three going to term and one aborting. One had a salpingostomy wth negative result. Two continued treatment for sterility in spite of the tube condition and four are being treated for the tube condition.

Under the heading of basal metabolic rate are grouped those cases in which the metabolism test was done and others in which for one reason or another the test was omitted. Some of these had symptoms of hypothyroidism. In eighteen cases in which a metabolism test was done, eight had positive rates varying from one to twenty. None be-

came pregnant. Ten had minus rates varying from one to thirty-nine. Two of these became pregnant. One went to term and one is now pregnant. Of the nine clinical cases two became pregnant. One has been delivered and one is now pregnant. One is still under treatment.

The results in the treatment of the primary cases may be summarized as follows: Forty bore live children (one aborted and then bore a live child). There were six abortions including the above, and one ectopic. Fourteen are now pregnant and fifteen are still under treatment.

A similar analysis of the ninety-nine cases of secondary sterility shows that eighteen patients did not return after the first examination. One of these had a cervicitis. One patient with a vaginitis did not return after the vaginitis was cured. Eleven patients who were treated for cervicitis became pregnant. One of these had an ectopic and one is still pregnant. Five patients did not continue treatment for sterility after the cervicitis was cured and one patient is still being treated for cervicitis.

One patient became pregnant after the routine physical examination and two others upon being treated for anemia. One other patient treated for anemia did not become pregnant and did not go any further with sterility treatment. One patient was treated at once with antuitrin and became pregnant.

Fourteen cases of retroversion were treated with a pessary. Nine became pregnant and went to term. It would seem that the pessary is much more effective in treating secondary sterility than in the primary form.

The Huhner test naturally was done less frequently in the secondary form of sterility. In the eleven cases in which it was done, it was positive seven times, doubtful four times, and negative twice. One of the patients with a doubtful test subsequently became pregnant, which again emphasizes the importance of a guarded opinion in such cases.

The tubes were investigated in thirty-two cases. Twenty-one patients of this group had patent tubes. Ten became pregnant and bore children. One, a case of endometriosis, is still under treatment. Of the five with doubtful tubes, one became pregnant and one is still under treatment. Of the six with closed tubes, two are now pregnant.

A metabolism test was done seven times. In five, the rate was positive, varying from one to sixteen. All became pregnant and went to term. Two had minus rates (five and nineteen). Both became pregnant with thyroid treatment and went to term. Two were treated with thyroid because of previous experiences, and both became pregnant and went to term.

The results in the treatment of the secondary cases are as follows: Thirty-nine bore live babies, one aborted, one ectopic, and one is now pregnant. Eight are under treatment. Forty-nine were negative or were lost sight of.

CONCLUSIONS

Thirty-six per cent of patients with primary sterility and 65 per cent of those with secondary sterility became pregnant when treated for cervicitis.

Posture and pessary treatment gave 16 per cent positive results in primary sterility and 64 per cent in secondary sterility.

Twenty-six per cent of patients in the primary group with patent tubes and 48 per cent of the patients in the secondary group became pregnant soon after this test.

Fifty per cent of patients in the primary group with partially closed tubes and 20 per cent of those in the secondary group became pregnant.

Fifteen per cent of the primary sterility patients with closed tubes and 33 per cent of the secondary patients became pregnant.

Twenty-one per cent of the primary sterility patients and 100 per cent of the secondary sterility patients became pregnant upon thyroid medication when such treatment was indicated either from the history or on account of a minus metabolic rate.

The primary group yields a total of 38 per cent pregnant cases and the secondary group 52 per cent.

It would seem, then, that cases of secondary sterility are more amenable to treatment by ordinary gynecological methods than the primary cases. Conversely, more of the cases of primary sterility have a deeper fundamental endocrine, development or congenital basis. I am sorry that the paper dealing with this phase of the subject had to be omitted from the program tonight.

CHRONIC ULCERATED COLITIS.

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The importance of prevention of chronic colitis may be reasonably placed along side of tuberculosis, heart disease and the rheumatisms, especially when one has studied carefully a few unmistakable cases, and has utilized religiously the studies of material now coming through our best journals from the foremost authorities in medicine for the past two years. If every physician would place well in his mind the ear-marks of the oncoming signs of beginning colon pathology, as no doubt many are doing, clinical results will ere long be as satisfactory as many other preventable diseases, providing, of course, full cooperation of the patient with his family physician can be had. The average physician today is better equipped than ever before to realize the ideals of the old time family doctor, granting that he is able to secure the confidence of his community, as the old doctor did, which ideal can never be improved upon. The bulk of preventive medicine has its largest hopes for best results in the family physician, as he should be unhindered by the usurpation of his rights by social and State medicine.

The study of many of the chronic diseases makes a sad picture when one pauses to consider the cost to the individual and his community, both in suffering and financial loss, largely because the family doctor is being deprived of his age-old divine heritage and rights of which he is so rapidly and wrongfully being deprived. A close study of chronic colitis reveals the cost of lack of cooperation on the part of both the patient and community, because of present-day tendencies and attitude towards the family physician.

One of the recent standard textbooks on gastro-enterology defines ulcerative colitis as an infectious disease of the large intestine. This, by implication, epitomizes the usual conception of the affections—etiology and the pathology. This definition restricts the underlying mechanism of production to the action of bacteria and their products and limits the reaction of the body to one particular segment of the gastro-intestinal tract. Studies which have been carried out by Thos. Mackie, of the Department of Public Health and Preventive Medicine, Cornell University Medical College, on a considerably large number of chronic colitis cases during the past two and one-half years convinces him that this definition is too narrow and that colitis *per se* merely is one part of a process which may and frequently does find expression in far distant parts of the body. It certainly seems probable that infection constitutes only a cog in the underlying mechanism, as borne out by close observation and study by Mackie and his co-laborers at Cornell.

For the most part, investigations into the nature of this disease have been devoted to the effort to determine a specific bacterial etiology. The results are contradictory. A variety of organisms has been suspected, and virulence has been ascribed to normal inhabitants of the colon associated with failure of the body's defense of them. Recently there has been much discussion of a specific diplo-streptococcus as the primary etiologic agent. This concept has not received universal acceptance, and the right of opinion probably rests with the statement that this organism is one of the predominating secondary invaders.

The relative infrequency with which positive cultures have been obtained and the questionable role of bacillus dysenteriae in chronic bacillary dysentery constitute important objections. Herne has well summarized the present-day position: "While it is clear that B. dysenteriae may be recovered in the stage of chronic dysentery and that it is embedded in the tissues rather than free in the lumen. its causal relationship to the lesions of chronic dysentery is somewhat incredible, especially in view of the severity of the disease and the paucity of the organisms. One cannot lightly discard the alternative hypothesis that recurrent dysentery is really ulcerative colitis to which acute dysentery has predisposed the patient."

Quoting Mackie: "Present-day Investigation. Specific Bacterial Etiology. We have attempted to gather additional evidence for this controversy. Cultures have been made through the sigmoidoscope from eighty-three consecutive cases of chronic ulcerated colitis seen in hospital, dispensary, and private

practice in New York city. Blood specimens from these patients have been tested for agglutinins against standardized suspensions of strains of B. dysenteriae. Evidence of infection by members of this group was obtained in thirty-five (42 per cent) of the series. Cultures and agglutination reactions on 103 control cases revealed similar evidence in nine, of whom seven were then, or had recently been suffering from acute or chronic diarrhoea. We encountered the same sources of objections which have been raised in the past against the many other bacteriologic theories of etiology. And we encounter additional evidence of the fact that neither a negative culture nor absence of specific agglutinins constitute valid evidence against infection by these organisms. The results of this study have been advanced as additional evidence against the hypothesis of a specific, primary bacteriology in ulcerative colitis. In view of conflicting results of similar studies and the wide divergence of authoritative opinions, it seems probable that a variety of organisms may, under special conditions, initiate the pathologic process, and be responsible in some instances for its continuance."

The well-recognized difficulty of treatment and its common lack of success again call into question the narrow concept of the disease mechanism. So-called "specific therapy," whether by vaccine or by serum, frequently is without material effect upon the course of the disease. Such results imply misconception of the role of the various bacteria to which etiologic significance is attached, undue faith in the bactericidal effect of the therapeutic preparations or the coincident action of factors other than those of infection which play an important part. Clinical investigation of this group of cases leads us to believe the latter to be the fact.

Etiology from Standpoint of Vitamin Deficiency

It has been suggested that vitamin deficiency combined with infection contributes importantly to the etiology. "Deficiency" symptoms are said not infrequently to occur. Advanced grades of deficiency disease have been reported occasionally but they are relatively uncommon. However, the rarity of the clinical entities to which formal names are attached conveys the impression that, although deficiency states do occur in severe instances, they are to be regarded as somewhat unusual complications rather than an integral part of the morbid mechanism of ulcerative colitis. In the past, this factor has been brushed aside with the statement that, although experimental evidence is striking, it is not supported by actual experience with patients.

Recent clinical and experimental studies have added much to our knowledge of the physiology of the vitamins. The anti-neuritic vitamin G has been shown to play an important role in appetite, in the production of hydrochloric acid in the stomach and in the motor activity of the intestinal tract. Lack of vitamin G leads to the development of atrophy of the lingual papillae in animals. Administration of this substance to man is followed by regeneration of the mucous membrane of the tongue and the disappearance of smooth atrophy. Inadequate supply of this factor intimately is related to certain of the macrocytic anemias. Recently characteristic changes in the skin have been attributed to lack of vitamin A.

It is apparent, therefore, that it is necessary to broaden the scope of deficiency disease to include more than xerophthalmia, scurvy, rickets, beri-beri and pellagra. Chronic vitamin deficiency probably leads to numerous vague, border-line states which are not included within existing clinical nomenclature. Cowgill considers these conditions likely to be much more complicated in man than they are in the experimental animal. Keefer believes that the composite clinical picture results not simply from lack of a single factor, as a vitamin, but from inadequate supply of other essential food substances, such as protein, iron, calcium, phosphorus and iodine.

Although certain of the recognized deficiency diseases have been encountered, the importance of deficiency states in ulcerative colitis systematically has not been investigated. Since the clinical expression of these conditions has been considerably extended in recent years, it seemed to us desirable to study the incidence of symptoms and physical signs pointing in this direction.

Summary of Material in Mackie's Group

The data collected by other workers and the results of our own studies lead us to believe that chronic ulcerative colitis is a disease resulting from the action of a complicated mechanism. It seems probable that this mechanism is only partially understood and that additional factors are involved

which at present are not appreciated. Although the immediate exciting cause appears to be the action of bacteria or their products upon the wall of the colon, existing evidence does not support the view that a specific race or strain is responsible. The converse proposition is more easily defended—that the primary agent may be any of a variety of different organisms. The similarity between the pathology of ulcerative colitis and that of bacillary dysentery, together with the results of cultural and serologic studies, suggest that, in a certain proportion of patients, B. dysenteriae may initiate the pathologic process.

The disease syndrome is not one which is limited wholly to the colon. Structural and functional abnormalities are demonstrable throughout the entire small intestine in a large proportion of the cases. Associated clinical phenomena and pathologic changes in other organs and tissues indicate that the morbid process is not restricted entirely to the gastro-intestinal tract but that chronic ulcerative colitis is, strictly speaking, a systemic disease associated with various clinical manifestations.

The incidence of "deficiency" signs and their variety suggest that deficiency disease constitutes one of the important factors in the initiation and the maintenance of ulcerative colitis. However, the scope of this term must be broadened so as to include not only the effects of inadequate supply of certain vitamins, but also the clinical expression of deprivation of protein and of essential inorganic substances.

Similarly, the evidence pointing to an allergic state of the intestinal tract obtained in many patients suggests that this factor also may play a significant etiologic role.

A few thoughts relative to treatment are suggested by Bargen, of the Mayo Clinic.

Cases of chronic ulcerative colitis may be divided into two major groups from the standpoint of treatment—the uncomplicated cases, and the cases in which there are complications, such as polyps, strictures, perforations, fistulae, regional disease and carcinoma. In cases in which these complications are present (representing approximately 15 per cent of the whole), surgical intervention is indicated.

In reference to uncomplicated cases, we find those in which systemic complications and sequelae are present, such as arthritis, erythema nodosum, uveitis, and other complications.

Rest is an important therapeutic agent in these patients. The type of rest must be very carefully chosen. There is a great need for encouragement, and for physical, mental and physiologic rest. The features of treatment which the years have taught to be of value have not been discontinued, nor would it be expedient to replace them by a single therapeutic agent. In attempting to give rest to the intestine, the residue in the food is reduced as far as possible.

Intestinal irrigations usually are not only not helpful, but in the majority of cases are actually harmful, causing more distress, greater frequency of rectal discharges, and often irritation about the anus. The only exceptions to this are to be found in the cases in which there is extensive ulceration of the anus and rectum, producing great local discomfort. In such cases instillation or topical application of some soothing medicament or powder may be helpful.

At first it might seem that the ideal method of giving rest to the colon would be by ileostomy. Actually, the risk of the operation is so great and the end-results so disappointing that at the Mayo Clinic it is avoided as much as possible. In the seventy-eight cases in which ileostomy has been performed in a decade, one of every two patients died in the hospital or later, and at the time of death had not recovered from the chronic ulcerative colitis. Ten of the surviving patients, who were subjected to ileostomy for sequelae after the colon practically had healed, were satisfied with the results.

Quoting Bargen, of the Mayo Clinic, concerning vaccines and sera:

"Immunization against the diplo-streptococcus of chronic ulcerative colitis with a concentrated serum has been an important adjunct of the Mayo Clinic treatment for the past six years. The serum has been injected intramuscularly and, more recently, intravenously. Injections are begun with minute doses, gradually increased, being careful to keep dosage under the point of local or systemic reaction. When response is noted, improvement may be slow but usually is progressive. Clearing up severe symptoms as fever toxic states, and bleeding may take weeks. As soon as this state is reached vaccine is prepared from diplo-streptococcus of chronic ulcerative colitis and given subcutaneously in gradually increasing doses less the point of local or systemic reaction for many weeks. After several months'

period of rest, treatment should be resumed and the vaccine given again for six or eight weeks. Where the diplo-streptococcus agglutin reaction is obtained, a program such as this should be continued for one or two years or even longer to assure future protection. This procedure has proved the greatest single item in preventing recurrence of the disease."

TRANSFUSION

Transfusions of blood may have great value, especially when the patient has bled profusely from the bowel, is very anemic and weak, or when marked sepsis with high fever prevails. A series of transfusions of small quantities of blood (250 to 300 c.c.) five or six days apart, possibly three in a series, has served best. Transfusions have proved particularly efficacious for children. It is noted that children less than twelve years of age with chronic ulcerative colitis are especially prone to the development of severe anemia.

DIET

Many physicians are prone to restrict too greatly the amount of food needed. As a result the patients lose in strength and ability to fight the malady. The ideal foods are those of high protein and vitamin content, with the lowest residue for the colon; hence the importance that the stomach and upper intestine are functioning at a good degree. Beef, rice, white bread, cereals, cooked eggs, butter and cream, are found to leave a very low colon residue.

DRUGS

No single drug has been found which will help more than an occasional patient. Gentian-violet, or the fresh tincture of iodine, seems to have helped selected patients. Gentian-violet, in doses just enough to color the stools, definitely inhibits the growth of streptococci. The arsenic preparations are dangerous. They may cause a flare-up, and it would be difficult to do anything for the patient if this should occur. The same may be said about mercurochrome and metaphen, as found by actual experience at the Mayo Clinic.

For anemia, 40 or 50 grains of reduced iron daily has proved helpful.

Paregoric and codeine may be given for relief of pain and tenesmus.

For frequent stools, bismuth, tri-basic phosphates and the preparations of kaolin are often very helpful.

Strontium bromide, 5 to 7 gr. doses, with luminal, ¼ to ½ gr., may be used every four to six hours, as required, to control extreme nervous symptoms.

Removal of all foci of infection is imperative, septic teeth, infected tonsils, just as early as the patient's condition will allow and as the physician's judgment dictates.

Relapses are common. Fifty-seven per cent were initiated by acute infections of the upper respiratory tract. Recurrences are more prone to occur during the winter months. Much may be done to prevent relapses—periodic use of diplo-streptococcic vaccine where this type is found. Careful and sure removal of all foci of infection, physical and emotional stress and strain, as well as exposure to weather changes, should studiously be avoided. Care in eating and drinking to prevent intestinal upsets are some of the many cautions which help to avoid exacerbations which are so much dreaded by both patient and physician, and which tax the physician's ingenuity to the utmost during an attack, be it primary or a relapse.

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ETIOLOGY OF INDIGESTION.*

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The etiology of diseases producing the symptom of indigestion might be more clearly defined if one resorts to three simple classifications:

First.—Those diseases situated in the alimentary canal proper or adjacent thereto.

Second.—Those situated external to the gastro-intestinal tract.

*Read by request before the Mid-Tidewater Medical Society, July 23, 1935.

Third.—The so-called functional disorders.

Perhaps one would be benefited in the discussion of the symptoms of indigestion if we review briefly the anatomy, histology, physiology, and pathology, of the gastro-intestinal canal, as approximately 65 per cent of the conditions causing the symptom of indigestion arise in this tube, or in very closely associated organs adjacent to the tube. The other 35 per cent giving indigestion as one of their symptoms will be found external to the gastro-intestinal tract, but reflexly, physiologically or biologically, will affect the functions of the organs of the gastro-intestinal tract.

The alimentary canal, for the sake of discussion, may be divided into the oral cavity, pharynx, esophagus, stomach, small and large intestines and anal orifice. This tract forms a continuous tube whose walls have throughout its entire extent many common characteristics. Thus, the wall in all portions consists of four coats which are respectively known from within outwards as the mucous, submucous, muscular and fibrinous. The three outer coats are of similar structure throughout all portions of the tract. In this discussion we are only interested in the inner or mucous coat.

The mucous membrane or mucosa of the gastro-intestinal canal contains four typical structures. First, an internal lining epithelium; second, a muscularis mucosa which forms the outermost layer; between these is number three, a tunica propria or corium of diffuse lymphoid areolar tissue which serves chiefly for the purpose of number four—the secreting glands.

The nature of the lining epithelium and the type of the glands differ in each succeeding portion of the canal and must, therefore, together with the other peculiarities of the several sub-divisions of the tract, be separately considered. The mucous membrane of the lower portion of the pharynx is lined by stratified squamous epithelium. All of these linings, of course, are supplied by blood vessels, lymphatics, nerves, etc., and contain many mucous secreting glands. The esophagus is ten inches in length and connects the pharynx with the cardia of the stomach, and is lined by stratified squamous epithelium.

The stomach is lined with tall columnar epithelium and the whole membrane is thrown into a wavy fold which is closely packed with tubular secreting glands that open on the surface by wide, crypt-like ducts.

Though the character of these glands differs somewhat in various portions of the stomach, three varieties, according to their distribution, are known as the fundus, pyloric and cardiac glands. The fundus or peptic glands are found chiefly in the central portion of the stomach and their functions are numerous and varied. The pyloric glands differ somewhat from their predecessor. The cardiac glands occupy a very small portion of the cardiac end of the stomach and they form a transition from the esophagus to the numerous fundus glands of the stomach. They possess peculiarities of construction and function.

The small intestines connecting the pylorus with the colon is twenty-four feet in length and is divided into three segments: the duodenum, eleven inches in length, with the common duct emptying into it; the jejunum, about nine feet, and the ileum, fourteen feet. The duodenum has a diameter of about two inches, but the canal gradually decreases in size until it is a little over one inch at the ileum.

The mucous membrane of the small intestine is studded with numerous intestinal villi, which are covered with tall columnar epithelium containing many mucous secreting goblet cells. There are numerous isolated nodules which are known as Peyer's patches. Solitary nodules with their characteristic lining occur throughout both the large and small intestine, but, as one will recall, Peyer's patches are only found in the small intestine and are most numerous in the upper portion of the ileum.

The large intestines includes the cecum, the colon —ascending, transverse, and descending portions— and the rectum. It measures about five feet in length. It connects the ileum with the anus. The vermiform appendix represents an atrophic vestige of the terminal portion of the embryonic cecum.

It would be difficult, indeed, to find a more striking example of disease being grafted on a tissue undergoing transition from one type of cell to another than is found in the frequency of disease of the vermiform appendix. The lining epithelium of the large intestine is of the simple columnar variety. The glands in this area are both columnar and goblet cells. In the rectum the lining epithelium is continuous at the anus with the stratified squamous epithelium of the skin. Lymphoid tissue abounds in the rectal mucous membrane. The glands are less numerous but are larger than in the colon portion. In the lower portion of the rectum the mucosa

is thrown into a number of longitudinal folds, the rectal columns, at which level the columnar epithelium changes to the stratified squamous type which gradually blends into the epidermis of the skin around the anus, analogous to that of the oral cavity.

So much for a brief resumé of the structural characteristics of the developments of the inner structure of the gastro-intestinal tract. With the foregoing in mind, let us discuss for a moment the significance of these changes.

As has previously been mentioned, it will be readily seen that the particular area that coincides with the transition of one type of cell into another is a fertile field for infection or disease. It is readily seen that the change of one type of cell to another also produces a chemical and physiological change in the fluids and substances of that particular area. The chemical and physiological reactions in different segments are striking and consistent in the normal bowel, and in the author's opinion strikes at the fundamental basis of disease. If one would compare the connecting joints, so to speak, of the gastro-intestinal canal with similar connections of a sewer or heating system, he will readily perceive that the joints where different segments are connected are the first to decay or start trouble. The gradual blending of the hard epidermis of the lip into the soft delicate mucous membrane of the mouth, is a beautiful piece of nature's welding of a more or less hard, resisting substance to a very soft, delicate membrane, covered with layers of stratified squamous epithelium which begins at the margin of the lips and continues with a gradual transition and fusing with the lining of the epithelium of the faucial isthmus and the pharynx. At this joint we have the interposition of lymphatic tissue forming the tonsils and adenoid tissue. This stratified squamous lining is continuous up to the alveoli projections which surround the teeth. Therefore, disease is common in this area. The accessory sinuses undergoing similar changes are also very prone to infection with their sequlae.

At the junction of the pharynx with the esophagus, there is a transition of one type of cell into another, though the esophagus is relatively free from disease with the exception of varicosities, cancer and syphilis.

At the junction of the esophagus with the cardiac end of the stomach, one encounters marked difference in cell construction, and, consequently, more chemical and physiological activity.

Entering the cardiac end of the stomach various degrees and types of gastritis, regardless of their cause, always produce profound symptoms of indigestion that manifest themselves in various and divers ways, of which, probably the most freqpent, is alteration of the chemical contents of the stomach, producing physiological changes of significance.

As the pyloric end of the stomach is approached, one not only finds a marked transition of cells but even more marked chemical changes, producing striking physiological conditions. The pyloric end of the stomach is a particular fertile field for disease beginning with the congenital stenosis in the newborn, through the various ages, ending with cancer of the stomach in the aged. The marked contrast of cell construction and chemical reaction found in the duodenum makes it probably the most frequent site of inflammation producing the sypmtom of indigestion.

As has frequently been stated, the palmar surface of the hand placed in the right upper quadrant will cover four-fifths of the diseases of the abdomen, all of which produce the symptom under discussion.

The ampulla of Vater, emptying all of the waste products, infections, and drainage from the liver through its various ducts, makes duodenitis in this area very conspicuous. Being external, though directly connected with the liver and its various ducts emptying into the gall-bladder and through the common duct directly into the gastro-intestinal canal, it causes hepatic disease, in the author's opinion, to be the greatest single factor in the production of diseases causing indigestion. Dilatation of the duodenum, ileum or jejunum produces various degrees of gastro-intestinal disturbances, manifesting themselves through migraine or other dysfunctions in the gastro-intestinal system.

Descending to the ileocecal region, the appendix in its various stages of pathology, due to its peculiar situation and other characteristics, is probably second in frequency among other organs in this tube as a cause of indigestion.

Diverticulitis, colitis, foreign bodies and visceroptosis in varying degrees present individual problems which have to be considered.

Hemorrhoids, adhesions, tumors, etc., through their external influences produce changes in the canal proper and have to be eliminated. Volvulus,

intussusception, lead poisoning, typhoid or paratyphoid, various diseases of the pancreas, fissure, abscess formation, diseases of metabolism, improper food, endocrine disturbances, cardio-spasms, pyloric spasms, intestinal obstruction, congenital abnormalities, embolic or thrombotic ulceration, influenza, tularemia, pellagra, dehydration, intestinal parasites, gastric crisis in tabes, tumors, syphilis, tuberculosis, chemical irritants, insufficient sleep, insufficient exercise, drug addicts, emotion, fatigue, grief and alcohol may each play a distinct part and serve as a disturbing factor—causing the symptom under discussion.

Among diseases external to the gastro-intestinal tract that should be mentioned are tumors, injuries or other changes within the cerebrum or spinal cord, and various nervous manifestations in general. Tumors of the mediastinum and various forms of goiter frequently give indigestion as their first symptom. Various lung diseases, especially tuberculosis, are prominent as etiological factors.

In recent years food sensitization from an allergic standpoint has been greatly increased, or we are finding out more about it. There are a number of foods that come under this group, but onions, milk and cabbage seem to head the list.

Cardiac involvement, especially of the decompensation type, is almost always manifested by symptoms of indigestion. Pelvic pathology and menstrual disorders in general are frequent offenders, as also infections of the genito-urinary tract. Syphilis plays a prominent part as well as a great number of other conditions—too numerous to mention in a paper of this nature.

As to so-called functional disorders, there exists serious doubt in the opinion of the essayist whether or not any disease has a functional basis. What is a functional disease? Our forefathers called pulmonary tuberculosis and other conditions functional in origin, but for most of these we now have a definitely known etiological factor. So, isn't it reasonable to assume that future generations will discover causes for diseases which up to this moment are unknown to us? This classification is only mentioned in order to discredit so-called functional disease as a distinct group; at the same time the writer suggests that, instead of using the term functional, we label those cases as at present undetermined.

After a thorough study of the various diseases peculiar to the gastro-intestinal tract that give indigestion as a prominent symptom, it will be found, in the great majority of incidents, that they have their origin in the particular location that coincides with the transition of one type of cell into another. Frequently this transition is the cause for other chemical and physiological changes, though quite often one or several different causative factors will be found in the same individual, and at points different from the transition of cells. Therefore, it is needless to say, all of them must be irradicated if the cure is to be effective.

No attempt has been made in this paper to diagnose any particular cause of disease producing indigestion but an effort has been made to divide the causes into those occurring in the gastro-intestinal tract, and a few of those conditions occurring in organs situated outside of the gastro-intestinal tract by either directly or indirectly influencing the normal physiological function of the canal. And, further, attention has been called to the erroneous idea by which we at times label conditions as functional, when we do not know the cause, whereas it is likely more careful study and future investigations will definitely establish their etiological status.

SUMMARY

1. As stated in the beginning, regardless of the time spent it would be practically impossible to mention and elaborate on the causes of indigestion.

2. An attempt has been made to establish two distinct classifications as to cause—first, those conditions arising in the gastro-intestinal tract proper or immediately adjacent thereto, and, second, those conditions external to the gastro-intestinal tract by either directly or indirectly altering its normal function.

3. A third classification is mentioned more to discredit it than otherwise, but at the same time to urge that the so-called functional diseases be labeled undetermined at present.

4. An attempt has been made to call your attention to the fact that the most frequent site of disease in the gastro-intestinal tract is at a point where there is a gradual transition of one type of cell into another type of cell, chemical and physiological abnormalities resulting.

5. There has been no discussion as to the *treatment* of the causes of indigestion but simply a brief outline as to the *causes*.

Medical Arts Building.

EMERGENCY MINOR SURGERY.*

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The advent of fast transportation has brought emergency surgery to every doctor. The epidemic of automobile accidents has made every practitioner, willing or not, a surgeon at some time or other. Because the average doctor, some distance from a hospital, is usually not prepared and more often not rewarded, and because of litigation and medico-legal angles, he accepts these cases unwillingly.

Recently I read the comments of a leading traumatic surgeon of New York City, who said: "There is no reason why the physician should not continue to be the good samaritan: in those ancient days the mode of transportation was the ass and the treatment was oil; instead the doctor now is the patient quadruped and the healing oil is sold by the gallon at filling stations."

How can we equip ourselves to deal with this problem in a more satisfactory manner? Minor surgery, or more specifically, emergency minor surgery is the answer.

1. *Wounds.*—Because of the suddenness of onset there is no defense barrier and because of traumatized tissue, bacteria can grow and spread rapidly. Proper treatment of wounds within four to six hours, and before the organisms can multiply, effects the best results. The doctor who sees the patient just after the accident can, therefore, get the best results provided his care of the wound is thorough and not merely first aid treatment.

Every wound not made under aseptic conditions should be considered contaminated and if over twelve or twenty-four hours old, infected.

If anesthetized, the wound can be exposed to its depths, foreign bodies and traumatized tissue removed and hemorrhage controlled. It is easy to say prepare the surrounding skin and inject novocain, but how few of the average doctors have the properly equipped office to do this! We have found it much easier to gently clean the skin and the wound with green soap and sterile water and then pack with a piece of cottton saturated in 10 cent cocaine or 1 per cent nupercain solution. When anesthetized thus, the torn edges can be judiciously trimmed, traumatized tissue removed and the depths of the wound explored and gently flooded with one of the dye antiseptics. Any bleeeding points can be tied off with fine catgut. A small drain, either of rubber or a few twisted strands of catgut, may be left in and the wound loosely sutured. Let me say at this point that it is useless to trim away necrotic tissue and then produce a great deal more necrosis by flooding an open wound with a very strong and irritating antiseptic, filling up the wound with a great quantity of heavy catgut material, or tying off a large piece of tissue in a mass ligature. Such treatment would necessarily produce more harm than the original trauma.

Skin clips for closing the wound margins are definitely advantageous because they can be adjusted much more carefully, because they very nicely control the oozing in the skin, and because their application is almost painless. We have used a thumb forcep with small teeth to hold the skin margins together while applying the clips. Clips should be removed in four to six days and leave no scars. Small strips of adhesive replace them for a few days to prevent too much tension on the healing wound. Where the wound is deep, several deep sutures are necessary to avoid leaving free space in which blood or serum may accumulate. After closure, a firm, tight-fitting dressing must be applied and the part immobilized. Such wounds heal by first intention.

Badly contused and lacerated wounds can be treated likewise. The sutures are placed but not tied until the second or third day. They require a large sterile dressing and immobilization. In such a manner massive infection and cellulitis can usually be prevented in lacerated and frankly infected wounds. Wet dressings, frequently changed, aseptically, are life saving in these cases. We use a large wet dressing covered with waxed paper or oiled silk to keep it moist. Saline or magnesium sulphate are undoubtedly the best solutions, when used for more than forty-eight hours. We have found 1 per cent carbolic or aluminum acetate solu-

*Read before the Physicians' Journal Club of the Eastern Shore of Virginia, May 14, 1935.

tion most beneficial in treating lacerated wounds for the first twenty-four or forty-eight hours.

Don't forget tetanus antitoxin must be given early where there has been any soil contamination.

2. *Infections and Infected Wounds.*—These rightfully come into this general discussion, not only because they are frequently of an emergency grade but also because improper treatment often leads to disastrous results. Cellulitis and lymphangitis are commonly encountered.

Absolute rest and large hot wet dressings are now generally conceded to be the most effective therapy. This form of treatment should be continued until the infection subsides or forms a localized abscess.

Let me stress the dangers of carbuncles and pustules of the face. Drainage around the nose and upper lip (by way of veins without valves) leads directly into the cavernous sinus. Infections of this region have to be carefully treated to prevent extension into this sinus followed by a sure sinus thrombosis with meningitis and septicemia. Moist heat and absolute rest is the treatment. Rest of the facial muscles must be obtained even to bandaging the face so they cannot chew or talk. Surgery here should consist only of picking off the top of a pustule. We have had to ligate the angular vein running up the nose in order to prevent an impending cavernous sinus thrombosis.

Localized, deep infections may be opened and drained, but care must be taken not to break down the inflammatory wall that surrounds them. Packing loosely with rubber dam drainage material and continuous hot moist dressings are excellent treatment. The Dakin irrigations are most effective where there is much sloughing or necrosis of tissue. For this small tubes are inserted into the wound and Dakin's solution injected every two hours.

Infections of the distal phalanx of the finger or felons, after localization, are best opened by a wide horseshoe incision, about ¼ inch below the nail and carried down to the bone. Seldom is it necessary to open more than one side of this horseshoe. Often when osteomyelitis has set in, a small piece of necrotic bone is found and this will sequestrate in a few weeks and resolution will take place without any further extension of the bone infection. Incisions into localized pus in the proximal phalanges are best made on the lateral sides.

Careful watch must be kept for tendon sheath involvement. Where there is pus in the sheath, there is always tenderness all along the finger and the gentlest extension causes pain. Even when well localized, tendon infections of finger, hand or arm should be drained by an experienced surgeon in order to prevent loss of function.

Adenitis, enlarged tender lymph nodes, should not be incised and drained unless fluctuation shows pus to be present. Rather treat the original infection and these nodes will usually heal up of their own accord.

Boils and carbuncles, in my estimation, ought to be well localized by rest, heat, and large dry dressings before they are incised. Infra-red light treatment is very beneficial in localizing the pus. Plunging a needle or toothpick, dipped in pure phenol into the center of the infected area is a well vouched-for treatment.

3. *Burns.*—Extensive burns necessarily demand hospitalization because of the shock and toxicity. Third degree burns are handled best by an experienced surgeon in a well-equipped hospital. However, the first aid treatment of these severe burns will materially help in their recovery. In our hands, some of the water soluble tannic acid jellies have been most effective. They can be applied as first aid and then be easily removed if the surgeon needs to do any further local treatment.

4. *Joints.*—Sprains should be treated by firm support and early mobilization. Synovitis of the knee calls for early aspiration by one well acquainted with the technique.

Dislocations can be reduced much more easily soon after the accident. After their reduction, the joint should be well supported and early motion begun. Watch for the possibility of an associated fracture; it often occurs.

Any wounds opening into a joint belong in the hands of a competent surgeon. An adequate arthrotomy is usually necessary to prevent a suppurative arthritis.

5. *Nerves and Tendons.*—Repair of divided nerves and tendons is a major surgical operation. Such a wound, unless seen early and in an uncontaminated condition, should be carefully treated as a simple wound and loosely sutured to prevent contamination or spread of infection up the tendon sheaths. After the wound is well healed and free of infection, a secondary repair can be done to the nerves and tendons. The best time is about three

weeks after healing, provided there was no infection. Wait three to twelve months in infected cases.

6. *Fractures.*—Most fractures should be reduced early, soon after they occur. Splint them well and *then* send to the hospital for X-ray and further care. Many minor fractures do not need this. Such treatment would prevent much of the swelling and laceration of tissue produced by the over-lapping fragments of the broken bone.

Local anesthesia is a great help in reduction provided it is used within twelve hours. Twenty c.c. of a 2 per cent solution of novocain, injected between the fragments, will give excellent anesthesia of the break. This must be carried out under very rigid antisepsis or an osteomyelitis might be produced. The tip of the needle is inserted between the fragments and its position proved by the aspiration of bloody fluid.

After reduction, it is often difficult to keep the fracture reduced. We have found that skin tight plaster splints, made of six or eight thicknesses of plaster bandage, and molded to the part are very helpful. These usually cover two sides of the limb and are held in place by a gauze bandage, applied while they are still wet.

In fractures of the humerus and tibia, the early application of a Thomas splint and traction will allow safe transportation and prevent muscular contractions. The ring of the Thomas splint fits tight around the shoulder or hip and traction is made on the hand or foot. The limb must be well supported between the bars of the splint. This early application of traction materially shortens the time of recovery in these difficult fractures. Could I but impress you with this point alone, my efforts would not have been in vain.

Compound fractures, because of the danger of osteomyelitis, are as much an emergency surgical procedure as acute appendicitis. We believe the best results can be obtained only by early operation in a well-equipped hospital and followed by thorough after treatment. When first seen, prompt antisepsis only, without any attempt at reduction should be practiced, unless the doctor is equipped to do an open reduction and debridement.

7. *Shock.*—This is an emergency that we all have difficulties with. Following trauma, it is usually a disturbance of functional equilibrium, with such marked depression that it may become fatal. "The earlier the treatment, the better the prognosis," has been quoted many times. Application of heat, lowering the head, absolute rest and hypodermics of morphine are known only too well to all of us. Treatment of the causative factor, whether it be a ruptured spleen or internal hemorrhage can only be done in a hospital. Concentrated glucose solution, given intravenously, early in shock, is an extremely important therapeutic agent. The preparations of 50 c.c. ampules of 50 per cent glucose solution already buffered by the addition of an alkali, have put this important agent in every doctor's hands. We should all be able to give an intravenous injection of this nature. The technique is simple and easily acquired. A 50 c.c. syringe with a fine needle is used and the solution given in one of the veins at the elbow. Normal saline can be given under the skin but requires a more complicated apparatus and fresh preparations of sterile saline. Used early in shock, these are often life-saving methods.

Conclusions.—In a rambling sort of fashion, I have tried to review for you certain principles of minor surgery that can be used effectively by every doctor, not only to his own satisfaction, but also to the great benefit of the patient that he has been called to see soon after an accident. Most of these methods are known to all of you, but more efficient application of them will make you feel less like the patient quadruped and more like the good samaritan.

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TRAUMATIC CYANOSIS IN THE NEWBORN.*

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B. R., gravida 1, para 0, age 22, was delivered of a premature baby September 11, 1934. The estimated date for confinement was November 11, 1934, giving the infant an age of approximately twenty-eight weeks. The duration of labor cannot be stated definitely because of the vague and ambiguous history given, but it was in all probability long. When admitted to the emergency room the cervix was completely dilated, at which time the membranes were ruptured. Presentation was vertex with the head well flexed. Delivery was spontaneous approximately one hour later. No cord was around the neck. The fetal heart tones were of good quality during the labor—rate 140.

The baby was in poor condition. The most striking feature was the intense purplish black discoloration of the face, neck and scalp with some scattered petechial hemorrhages. No other part of the body was cyanotic. As in a case reported by Telfair and Gaines,[1] administration of carbon dioxide and oxygen caused a glowing of all parts of the body except the discolored areas. The child lived a little over twelve hours. The cause of death was prematurity.

Necropsy was performed by Dr. Aaron S. Price, pathologist to the hospital. "There was marked cyanosis of the neck and face, while the remainder of the body was pallid. The skull was opened and there were no pathological findings except for subaponeurotic ecchymosis. There was meningeal and cerebral edema. There were no tentorial lacerations, and no evidence of intracranial hemorrhage or of a tumor." There was little congestion in the lungs. The foramen ovale was patent. A dissection of the neck revealed no congenital anomalies of the blood vessels.

Telfair and Gaines report a case similar to this one. Theirs was a ten-pound child delivered from a para 7. In delivering the shoulders some difficulty was encountered. There was no laceration of the perineum or vagina. The clinical picture was the same as that cited above, except that there was some cyanosis of the extremities and necropsy revealed a subtentorial hemorrhage. Their case is classified as traumatic cyanosis.

Sahler[2] (1929) observed several cases of transient cyanosis of the face, arms and thorax in the newly born. Because of a broad shadow in the region of the right auricle on fluoroscopic examination, he assumes the presence of some obstruction to the superior vena cava. This assumption seems to us to be hardly tenable.

Traumatic asphyxia is quite rare. It is a localized cyanosis of the face and neck, usually following compression upon the thorax, sometimes the abdomen. One sees it in those cases that have been trampled on in panics or when the victim is crushed between two firm bodies. Telfair and Gaines have very probably reported the first case as a complication of labor.

We are rather inclined towards the viewpoint of Laird and Borman[3] and would make a differentiation between traumatic asphyxia and traumatic cyanosis. The latter is caused by intense, sustained, local trauma. We think there is hardly enough compression of the chest wall to cause traumatic asphyxia in a three-pound baby during a normal delivery. Rather would we attribute the cyanosis to the trauma of a one hour second stage of labor with ruptured membranes. This would classify the case we report as one of traumatic cyanosis.

The findings of a congenital heart lesion may, in the minds of some, nullify our premise.[4] In infants with congenital heart lesions there is sometimes cyanosis of the lips, nares, and ears (Osler) but not of the whole head. Cyanosis in the newborn, concomitant with congenital cardiac lesions, is either over the whole body or in isolated patches.

SUMMARY

A case of traumatic cyanosis is reported.

The actual source of the trauma is hard to determine.

This is very probably one of the very few reported cases of traumatic cyanosis in the newborn.

*From the Obstetrical Service, New York Polyclinic Hospital.

I am indebted to Dr. Ross McPherson, deceased, for permission to report this case from his Service at the New York Polyclinic Hospital.

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118 College Avenue.

Public Health Statistics

I. C. RIGGIN, M. D.
State Health Commissioner of Virginia

The communicable disease reports received at the office of Dr. G. F. McGinnes, State Epidemiologist, for the month of December, 1935, show the following cases compared with the same month in 1934:

	1935	*1934*
Typhoid and Paratyphoid Fever	23	55
Diphtheria	161	252
Scarlet Fever	222	489
Measles	122	843
Meningitis	16	9
Poliomyelitis	3	2
Rocky Mountain Spotted Fever	2	0
Typhus Fever	0	0
Undulant Fever	2	4
Tularaemia	27	23
Smallpox	0	16

Tentative figures of the number of cases of certain diseases reported to the Virginia State Department of Health for the calendar year of 1935 have been compiled. The following table shows the number reported from January 1 through December 31, 1935, compared with 1934 and with the average number per year for the preceding five years (1930-1934):

	1935	*1934*	*5-yr. Aver. (1930-4)*
Typhoid and Paratyphoid Fever	735	777	1,182
Diarrhea and Dysentery	3,592	4,241	6,278
Measles	18,216	29,589	15,132
Scarlet Fever	2,116	3,034	3,286
Diphtheria	1,432	1,989	2,652
Poliomyelitis	679	85	76
Meningitis	251	115	101
Tularaemia	87	57	69
Pellagra	148	234	510
Syphilis	5,205	5,725	5,214*
Gonorrhea	3,386	3,497	3,194*
Rocky Mountain Spotted Fever	39	47	21
Typhus Fever	8	5	22
Undulant Fever	37	33	32
Smallpox	10	31	89

While these figures are not final they do permit a fairly accurate analysis in regards to significant changes in prevalence of the various diseases shown.

The difference in the number of typhoid and paratyphoid and diarrhea and dysentery cases reported in 1935 compared with 1934 is small. It is noteworthy however, that there has been a gradual decline in the incidence of these diseases since 1931 and it is believed that with improved sanitation they will become less and less prevalent.

The reported cases of measles, while showing a decided decrease from 1934, are still above the five-year average. However, the change is not significant when the cyclic nature of this disease is considered.

The number of cases of scarlet fever is the lowest recorded for the State of Virginia since 1919 and nearly a thousand less than in any year during the past five. It is difficult to evaluate the meaning of this decrease.

There were 1,432 cases of diphtheria reported during 1935 which is 557 less than in 1934 and 1,220 less than the average for the preceding five years. This figure for 1935 represents the lowest number on record in Virginia. It well emphasizes the importance of diphtheria immunization and if the parents of Virginia will continue to have their physicians immunize their children between the ages of six and nine months the number of cases will continue to decrease.

The increase in the number of poliomyelitis cases caused by the unusual prevalence of this disease in Virginia from June through September, 1935, has hardly escaped recognition by physicians or the general public.

The increase in cerebrospinal meningitis is not as marked as it was with poliomyelitis and is attributed in part at least, to the concentration of men in C. C. C. and work relief camps.

Pellagra, which has been on the decline since its peak in 1930, is still on the downward slope and has reached a new low level in 1935. It is believed that the necessity of resorting to home grown fruits

*Reportable since July 1, 1932.

and vegetables for food during the past few years has been responsible at least in some measure for the decrease in the incidence of this disease.

The number of cases of syphilis and gonorrhea remain high and are roughly the same as in 1934.

Little of significance can be shown in the comparison of the other diseases listed.

Woman's Auxiliary to the Medical Society of Va.

President—MRS. FLETCHER J. WRIGHT, 49 S. Market St., Petersburg.

President-Elect—MRS. F. D. WILSON, 5352 Studley Ave., Norfolk.

Corresponding Secretary—MRS. MEADE EDMUNDS, Walnut Hill, Petersburg.

Recording Secretary—MRS. HAROLD W. POTTER, 70 33rd St., Newport News.

Treasurer—MRS. REUBEN F. SIMMS, 2502 Hawthorne Ave., Richmond.

Organization and *Hygeia*—Main Objectives for 1936.

The Auxiliary to the Medical Society of Virginia has two most important objectives for the year 1936—Organization and *Hygeia*.

In order to promote organization one must have "inspiration, education and cooperation," as cited by Mrs. Southgate Leigh, of Norfolk, at a recent meeting. Virginia women are particularly fortunate in having the first two requisites, and the third should not be a hard one to acquire. Our State has the honor of being one of the charter members of the National Auxiliary. Virginia is one of the leading medical centers of the South with its Medical College at Richmond, and its splendid Medical Department at the University of Virginia. Our doctors have gone far in the field of medicine. As wives, we want our husbands to be proud of us! As organized members of a Medical Auxiliary, our doctors will be proud of our achievements! Each local Auxiliary has its organization problems. There are probably groups of doctors' wives who would like to organize, but do not know how to proceed. No set rule can be applied to insure success in organization and increased membership. The old axiom "if at first you don't succeed, try, try again" is one of the best to work on. Mrs. F. D. Wilson, 5352 Studley Ave., Norfolk, Va., State Chairman of Organization, is ready to be of assistance at all times.

In writing of *Hygeia* in a recent issue of the *American Medical Association Bulletin*, the National Auxiliary President, Mrs. Rogers N. Herbert, says: "Since the secret of success is constancy of purpose, in planning for the year each Auxiliary must base its plan on our one great aim, which is to help promote Public Health Education by serving as intermediaries between the medical profession and the laity. The great foundation for all our health work is the promotion of the magazine, *Hygeia*."

Hygeia is not a magazine which interests only those connected with the medical profession. It is published by the American Medical Association for the laity, and contains articles of interest for everyone, for young children as well as for persons of advanced years.

The Virginia Auxiliary has fallen far behind the other Auxiliaries in *Hygeia* subscriptions. Each member should consider herself a committee of one to secure her husband's renewal subscription and at least one additional subscription. If this can be done, 1936 will be a banner year for *Hygeia* in Virginia.

The Southern Medical Council's Report,

Read by the Chairman, Dr. Bloss, at a big public meeting in St. Louis, contained the following item concerning the Auxiliary:

"The Council recognizing that the Woman's Auxiliary is an important part of the Southern Medical Association, suggests that the Auxiliary have a complete reorganization, and along the lines of the Southern Medical Association. The wife, daughter, mother and unmarried sister automatically becomes a member of the Auxiliary *without dues*.

"In cases where the member has passed on, his widow can remain a member of the Auxiliary.

"The Auxiliary to budget its necessary expenses for officers and committee chairmen, and for the printing of minutes, bulletins, etc. This expense will be assumed by the Southern Medical Association.

"The Auxiliary projects to be inspirational, informative and constructive.

"The Auxiliary has the privilege of securing its own funds for its own projects."

Auxiliary to the Postgraduate Medical Society.

At a recent meeting, the Petersburg Auxiliary held its election of officers as follows:

President—Mrs. E. L. McGill; Vice-President—Mrs. E. J. Nixon; Treasurer—Mrs. W. B. McIlwaine; Secretary—Mrs. C. S. Dodd.

This Auxiliary voted to give fifteen six months' subscriptions of *Hygeia,* these to be placed in all Beauty Shops in the city, the white and colored Community Centers, and the Petersburg Hospital. It is the hope of this Auxiliary that these subscriptions will be continued after the six months has elapsed. It is suggested that this method might be used to material advantage throughout the State.

The Auxiliary to the Richmond Academy of Medicine

Had as its guest speaker at the January meeting Dr. R. Angus Nichols, Jr., who gave an interesting talk on gynecology. At this meeting Mrs. Charles P. Mangum was appointed Public Relations Chairman. On motion it was decided to investigate the advisability of offering a prize in the schools of Richmond for the best essay on Public Health, the first prize to be $3.00 and the second $2.00. If this contest is undertaken it should create a great deal of interest locally as well as throughout the State.

Radio Programs.

Remember the radio programs by the American Medical Association each Tuesday afternoon at 5:00 P. M., Eastern Standard Time, on a Coast-to-Coast Network of the National Broadcasting Company.

Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association:

Parke, Davis & Co.
Mapharsen
Ampoules Mapharsen 0.04 Gm.
Ampoules Mapharsen 0.06 Gm.
Ampoules Mapharsen 0.4 Gm.
Ampoules Mapharsen 0.6 Gm.

E. R. Squibb & Sons
Squibb Cod-Halibut Liver Oil.

The following product has been accepted for inclusion in the List of Articles and Brands Accepted by the Council But Not Described in N.N.R. (New and Nonofficial Remedies, 1935, p. 445):

The National Drug Co.
Smallpox Vaccine (Vaccine Virus).

Propaganda for Reform

The Eleventh Revision of the Pharmacopeia of the United States of America.—The Eleventh Revision of the Pharmacopeia is now at hand. The new Pharmacopeia follows the old one in style and general method of presentation. The progress of the revision may be measured in part by the deletions. The Revision Committee reports that 119 products have been deleted either because they had been superseded by better products pharmaceutically or medically or because their period of usefulness had expired in view of more modern methods of treatment. The new additions to the Pharmacopeia, of which there are fifty-eight, include Calcium Gluconate, Carbon Dioxide, Chiniofon Powder, Ephedrine and the Hydrochloride and Sulfate, Ethylene, Histamine Phosphate, Iodophthalein Soluble (Tetraiodophenolphthalein Sodium), Merbaphen, Mercuric Succinimide, Mild Tincture of Iodine, Neocinchophen and Parathyroid Solution. Thirty-nine of the new additions are already familiar to physicians in New and Nonofficial Remedies; sixteen are so well-established that they appear in Useful Drugs. Of course there are a number of drugs without which the physician cannot practice successfully which are not included in the Pharmacopeia. This is in accord with the recognized policy of the Pharmacopeia that monopolized substances are not admissible; thus, as long as there is a patent for insulin it cannot be admitted. There are also other drugs, such as certain mercurials, arsenic preparations and antiseptics, for which the physician will continue to rely on New and Nonofficial Remedies for his guidance. It would seem well, if an interim revision is issued, that a shorter acting barbiturate be included. For instance, pentobarbital sodium is a nonproprietary drug having the necessary short-acting attributes. Within the last two years the Committee on Revision in cooperation with the Board of Trustees of the United States Pharmacopeial Convention has initiated a practice of issuing an "interim revision." This has now become an established policy. It has the advantages of early correction of serious mistakes and the necessity of making products conform with new manufacturing processes. However, it has the decided drawback of requiring the physician to keep constantly in mind any possible changes which the Committee may issue affecting prescription practice and may easily become a hardship on manufacturers. It is hoped, therefore, that these revisions will be issued most conservatively. The nomenclature used in certain instances in the new Pharmacopeia is unfortunate. For instance, physicians are asked to prescribe "Theophylline with Ethylene Diamine," when there was already available to the Pharmacopeia the nonproprietary name Aminophylline. The Pharmacopeia has also included the cumbersome term of the British Pharmacopeial Commission, "Solution of Irradiated Ergosterol," when the non-

proprietary name "Viosterol in Oil" would have been much simpler. In the interest of the medical profession *The Journal* will continue to use the terms Aminophylline and Viosterol in Oil. As has so often been said, common usage establishes a name. Seldom did one use the word "Gluside" in prescribing saccharin, so the Pharmacopeia has reverted to the old term "Saccharin." Names and standards for the ten newly admitted biologicals (a Typhoid, a Typhoid-Paratyphoid and Rabies Vaccines; Scarlet Fever Streptococcus Toxin and the Antitoxin; Diphtheria Toxoid and the Toxin for Schick Test; Antipneumococcic (Type I) and Antimeningococcic Serums and Old Tuberculin) were provided by the National Institute of Health. A subcommittee on vitamins, responsible for the Interim Revision of Cod-Liver Oil, will oversee standards on this vitamin A and D containing substance. The International Units of vitamins A and D and digitalis have become the official U.S.P. units, with some modifications. It is interesting to note the description of liver and stomach preparations. Here no standards are given, but the Pharmacopeia endeavors to control these products with the following statement: "This Board will indicate liver and stomach preparations which are of Pharmacopeial quality—as indicated by submitted clinical data." For the most part the latest addition of the Pharmacopeia is indeed a credit to the Revision Committee. *The Journal* and the Council on Pharmacy and Chemistry have consistently urged that physicians prescribe official preparations whenever possible. (*J. A. M. A.*, December 21, 1935, p. 2074.)

Gold Therapy in Arthritis.—The use of gold as a remedy is not new. The value of the metal has always conferred upon it possibilities for symbolic and suggestive therapy. Recently, however, gold has been used seriously and extensively. Major attention has been directed toward its use in tuberculosis of various forms, asthma, arthritis and certain skin diseases. The precise way in which gold acts is not known. It seems improbable that, in vivo, gold has any direct action on organisms. It has been suggested that it may act by "stimulating some defense forces in the patient." most probably the cells of the reticulo-endothelial system. Such an action is similar to that of nonspecific proteins. Although scientific reports on gold therapy are infrequent in the domestic literature, several recent reports have appeared in continental and British journals, especially with reference to its use in rheumatoid arthritis. Thus there is now a considerable amount of independent work indicating the therapeutic effectiveness of gold salts in rheumatoid arthritis. The best preparation, mode of administration and dosage are not a matter of general agreement. However, all reports are in agreement on the toxicity of gold compounds. Erythematous and even exfoliative dermatitis may be observed. Nephritis with albuminuria, edema and sometimes raised blood urea may occur. A tendency to bronchial irritation has been noted. Shock and collapse occurring immediately after an injection have been reported. Pyrexia has been reported and is probably more frequent when an intravenous preparation is used. Stomatitis and diarrhea sometimes occur. Isolated cases of hyperkeratosis of the soles, pustular dermatitis of the hands and feet, labial edema, herpes zoster, erythema nodosum, lichen planus and purpura have been noted. The conservative attitude that must still be taken in the use of gold preparations is indicated by the fact that the Council on Pharmacy and Chemistry has not yet accepted any therapeutic gold preparation with claims of usefulness in arthritis. It seems that aurotherapy is promising in a restricted field when some of the doubtful factors become clear and the necessary precautions against toxic reactions standardized. At the present time no one who is not thoroughly familiar with the indications and dangers should attempt its use. (*J. A. M. A.*, December 28, 1935, p. 2163.)

The National Formulary VI.—When Congress created the Food and Drugs Act in 1906 it included as official standards for the purpose of the act not only the United States Pharmacopeia but also the National Formulary, a book published by the American Pharmaceutical Association. The National Formulary was characterized as a standard only for those preparations which are not provided for by the United States Pharmacopeia. The Sixth Revision which is now available, is superior to previous issues in that it follows the style of the Pharmacopeia rather than being divided into three sections. Eighty of the 119 articles omitted from the Pharmacopeia have been incorporated in this volume. There are 150 other admissions and 319 deletions. The largest single group addition is the Ampoules, some containing certain new and old Pharmacopeial items. The National Formulary lists certain types of tablets but, unlike its predecessor, does not prescribe as rigorous standards for the preparations. Essentially, any size tablet of the preparation described in the National Formulary now becomes official. It is interesting to note also that glandular preparations have been included in the National Formulary, but it must be admitted that there is no evidence of the value of some of these preparations given orally. The sincerity of the Committee that has charge of this work is recognized, but the National Formulary still seems to be a superfluous publication. There should be only one book of official standards for medicinal preparations published in the United States. (*J. A. M. A.*, December 28, 1935, p. 2164.)

Book Announcements

The Parathyroids in Health and in Disease. By DAVID H. SHELLING, B.Sc., M. D., The Johns Hopkins University and Hospital, Baltimore. The C. V. Mosby Company, St. Louis, Mo. 1935. Octavo of 335 pages. Illustrated. Cloth. Price, $5.00.

This book, which the author in his preface modestly styles a monograph, reminds one of Dr. Cushing's epochal work on the pituitary published in 1913, even though the subject of the parathyroids

is not as large a one nor possibly as important as the pituitary.

It is really a pleasure to review a book about which one can make no criticism. The whole work is admirably arranged with full bibliography of each chapter and is as adequate as a treatise on this subject at the present time could be. The history, pathology, symptoms, and manifestations are wisely expounded. The relation of the parathyroid to calcium and phosphorous metabalism is shown in excellent metabolic linkage. The various means of overcoming hypo and hyper parathyroidism are sanely discussed and bring us up squarely to the present time. The relationship of parathyroid disease to von Recklinghausen's disease and other conditions is definitely explained. Many important things are pointed out as, for instance, the retention of blood phosphates in cases in which there is a decreased blood calcium. The whole book is scientific and at the same time readable, practical and helpful. It would be of definite service to medicine if each endocrine gland could be treated in the same manner in which the parathyroids are in this work. The writer unhesitatingly advises every physician interested in any phase of endocrinology to read Dr. Shelling's book and read it carefully.

BEVERLEY R. TUCKER, M. D.

Immunology. By NOBLE PIERCE SHERWOOD, Ph.D., M. D., Professor of Bacteriology, University of Kansas, and Pathologist to the Lawrence Memorial Hospital, Lawrence, Kans. St. Louis. The C. V. Mosby Company. 1935. Illustrated. Octavo of 608 pages. Cloth. Price, $6.00.

Professor Sherwood has been engaged many years in the effort to impart this general field of knowledge to college and medical students. He and his colleagues have accumulated a mass of notes from historic and current sources which have served as a basis for lecture and laboratory exercise. These have now been assembled and made available in book form.

Into five hundred and seventy pages of text have been compressed a most thorough and industrious compilation of definitions, theories, inferences, observations, and technical procedures culled from all fields of science, which have, or may have, or may have had a bearing upon the general field of immunology. The treatment is necessarily cryptic and topical in character, but to each chapter is appended a long list of references, and to these sometimes are added "Additional" or "Supplementary" references.

One is inclined to wish that the author, with the maturity of long experience, had exerted his critical faculty to a greater degree in shortening or entirely eliminating the consideration of theories and interpretations, once perhaps useful, now outgrown. This text has not avoided the common fault of preserving much that is useless along with that which is of proved value, nor is it free from what are at times annoying errors. From the point of view of a detailed and accurate discussion of the problems of infection and resistance it leaves much to be desired. As a sort of encyclopoedia of laboratory immunology it is quite valuable.

KENNETH F. MAXCY, M. D.

Library Books Available to Members.

The following are some of the newer books in the Library of the Medical College of Virginia, Richmond, available to Virginia doctors, the only cost being return postage:

Lythgoe, R. J.—Illumination and visual capacities.
McComas—In ghosts I have talked with.
Mackay, H. M. M., et als.—Nutritional anemia in infancy.
MacLaurin, C.—Post-mortem.
McLester—Nutrition and diet.
Macphee, G. G.—Studies in the etiology of dental caries.
Marett, R. R.—Head, heart and hands in human evolution.
Mawson, C. O. S.—Dictionary of foreign terms found in English and American writings of yesterday and today.
Micks, R. H.—The essentials of materia medica, pharmacology and therapeutics.
Miller, W. C.—Black's veterinary dictionary.
Mönnig, H. O.—Veterinary helminthology and entomology.
Mummery, J. H.—The structure of teeth in relation to dental disease.
Newsholme, Sir A.—Fifty years in public health.
Nicolau & Galloway—Borna disease and enzoötic encephalo-myelitis of sheep and cattle.
O'Gorman, C. M.—Bringing science into the road traffic problem.
Onchocerciasis, with special reference to the Central American form of the disease by R. P. Strong, et als. In 4 parts.
Palgrave, R. H. I.—Dictionary of political economy.
Pope & Young—The art and principles of nursing.
Prinz & Greenbaum—Diseases of the mouth and their treatment. New edition.
Pyke, R. L.—The legibility of print.
Rand & Sweeney & Vincent—Growth and development of the young child.

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Editorial

The General Assembly and Medicine.

In pursuit of the purpose of the VIRGINIA MEDICAL MONTHLY to further every move in the direction of placing all medical matters in the State of Virginia under the supervision of medical men and to make the Medical Society of Virginia morally and politically as powerful in this State as it ought to be, we take pleasure in publishing the following observations of Dr. Beverley R. Tucker.

> Again that historic body, the General Assembly of Virginia, meets. Again come up before this assembly important medical matters that affect every practitioner in the State. Again the medical profession of the State of Virginia should unhesitatingly express itself upon some of these matters that appear to be detrimental to the medical profession and that invade its inherent rights.
>
> Probably the most important medical question facing the people today is the proper direction of that branch of medicine known as psychiatry. No longer can the physician outside of this specialty conscientiously say, "I know nothing about it and care less." No longer can the profession sit supinely by and let legislation be enacted detrimental to the proper advancement of psychiatry without raising its voice.
>
> Two matters will probably come up before the present legislature. If it is true that there has been a recommendation by the Governor for a rather large sum of money to be spent for the further elaboration of the so-called private sanatorium in connection with the Western State Hospital, it would set up not only class feeling but class legislation within a single State institution. But in the present status of the State's finances, or in fact in any status, this appropriation should not be made to this sanatorium. If the State has extra money to spend on psychiatry in this institution, would it not be just and wise to give it to the main institution for the indigent insane for better medical attention rather than to the small pay sanatorium on top of the hill at which those confined in the large hospital must look with envious eyes?
>
> Another matter that it is understood will come up is the recommendation that the large general hospital board be done away with and a board of five or six be in control of all of the hospitals. This is a most excellent provision, provided that the five or six are not political appointments and further provided that at least two physicians, one of them a trained psychiatrist. be on this small board. The Richmond Academy of Medicine has passed a resolution to this effect. The management

of the State insane is a difficult problem at best and without the aid and help of those trained in psychiatry, how could such a board function properly?

What is Happening in Neuropsychiatry.

Stanley Cobb's review of neuropsychiatry in the last issue of the *Archives of Internal Medicine* seems to us so good that we believe a summary of his summary might serve a useful purpose. From the mass of material the reviewer has boiled down to a few pages, one is convinced that neuropsychiatry is not a static specialty. He begins by presenting the evidence to show that it is becoming old fashioned to speak of functional diseases, that in the words of Jelliffe, somatic changes are either reversible or irreversible, and that many so-called organic lesions may in reality have psychogenic origins.

Equally momentous implications lie in the discovery that certain humeral agents may be responsible for the transmission of nervous activity from nerves to muscles. One such agent, effective as a vagal stimulus, has been identified by Sir Henry Dale as almost certainly acetyl chloline. Another has been described by W. B. Cannon as operative upon the sympathetic nervous system and named by him sympathin.

The reviewer next turns to the myopathies and takes courage from the fact that some order seems to be emerging from the chaos of these syndromes. He discusses the application of the radio amplifier and the oscillograph to the technique of neurophysiology and shows that the electro-encephalograms—as the records of minute changes in electrical potential in the brain are called—have demonstrated wave-like changes in voltage. The character of these brain waves appears to vary over various parts of the cerebral hemispheres and to be modified by sleep, drugs and anaesthesia. The very complexity of the brain appears to limit the practical application of such instruments to the study of disease.

Epilepsy came to the front during 1935 as probably the most thoroughly discussed psychiatric disturbance of the year. It is becoming more apparent that epilepsy is not a disease in itself but a manifestation of some lesion of the central nervous system. Reference is made to the fact that alterations in the water balance, the acid-base balance. the oxygen or blood supply may modify the frequence of seizures. It is pointed out that certain lesions of the brain lend themselves to successful operative procedures and the possibilities of the hypodermic injection of chloline in the control of the seizures was brought out.

The effectiveness of ergotamine tartrate in the control of migraine is referred to. Fever therapy in the treatment of dementia paralytica seems to be thoroughly accepted now as the most promising therapeutic procedure. It is brought out that hyperpyrexia may be induced by many methods—infection with malaria, typhoid vaccine intravenously, diathermy and hot cabinets, but "perhaps the safest and simplest device is the electric blanket, which is easily controlled and keeps the patient's temperature at 104° to 105° F. by mouth for several hours without discomfort."

The reviewer allows himself to examine the latest theory concerning the pathogenesis of multiple sclerosis, advanced by T. J. Putnam as a result of several years' experimental work. This investigator has expressed the belief that multiple sclerosis and certain forms of encephalomyelitis are but different manifestations of the same process, similar conditions having been produced in animals by minute doses of tetanus toxin. Obstruction of the cerebral venules appears to be responsible for these changes and they are similar to those observed in human histological studies. The theory seems to strengthen the conservative point of view that "rest in bed during an exacerbation and an open air regimen with much rest and sunshine between attacks, combined with a careful search for and removal of foci of infection, comprise the best treatment at present."

Cobb closes his review by a brief discussion of the psycho-neuroses. First calling attention to the recent attempts to produce these disturbances in laboratory animals, to Pavlov's dogs with psychological conflicts and to Liddell's sheep with "enduring derangement of behavior," he then passes to psychoanalysis and points out that the method is becoming more and more popular in the treatment of the minor psychoses. To Freud whose latest book *New Introductory Lectures on Psychoanalysis* appeared in 1933, he pays high tribute, closing with the words: "Freud is a great man, certainly an artist and a philosopher with an extraordinary intuitive faculty. He has probably made some remarkably shrewd guesses which cannot be proved

or disproved for many years to come. He weaves theories of human behavior that have hitherto been inexplicable. He sees deep into human nature. All great authors have done this, and some philosophers, but it is not science."

Cold Vaccination by Mouth.

V. Ross reported in 1934 the oral immunization of rats and human beings to certain types of specific pneumococci. Several years before this the oral administration of vaccine had been successfully employed by Besredka in typhoid fever. Oral immunization to colds is the subject of a short but noteworthy article in the June number of the *Journal of Immunology* by George E. Rockwell and Herman C. Van Kirk. They prepared a heterophile antigenic vaccine of streptococci and pneumococci. After the organisms were killed and dried they were incorporated in starch and put up in capsules containing one hundred billion of each organism. One capsule was administered each morning before breakfast with a glass of cold water for several days and thereafter a single capsule was taken at weekly intervals during the period of the experiment. Slight or negative reactions followed. The authors report the results of extensive experiments of cold prevention using this method of vaccination. Approximately one thousand persons were employed in the experiments, about one-half of whom served as controls. For the preceding years the five hundred who received the vaccine had suffered from an average of 3.03 colds per person per year. After vaccination the same group experienced but 1.30 colds per person per year, a decrease of 57 per cent. The control group on the other hand had about as many colds as they had averaged for the preceding three years.

A study of the serum of a selected number of the vaccinated group showed that the effect of oral vaccine in cold prevention varies directly with the titre of the blood in heterophile antibodies. Those cases which responded to vaccination with as much as 150-600 heterophile units per cubic centimeter of serum showed 96.7 per cent decrease in colds. Those with heterophile units from 60-75 showed 76.1 per cent decrease. Where there was little or no titrable antibody the incidence of colds was unchanged.

The advantages of oral administration of vaccines especially in the prevention of the common cold are obvious. Not only is this an easy method of administration, but the ability to take it frequently and over a long period of time meets one of the difficulties previously encountered in immunization against colds, namely, the short lived immunity enjoyed by most persons.

Typhoid Hints.

It won't be long before holiday seekers will be asking the advice of physicians regarding the necessity for prophylactic typhoid vaccination. In this connection it is perhaps well to review the facts at hand. The old idea that one attack of typhoid always confers immunity is probably not true and all persons whether they have had the disease or not should be vaccinated periodically. How often one should be vaccinated has never been settled definitely. Opinions vary widely. In the United States Army revaccination is practiced every four years. In the French army annual revaccination is advocated.

The division of the vaccine doses into three weekly administrations is purely an arbitrary matter designed to reduce reactions to a minimum. During the late war lipo-vaccine was employed so that the whole dose might be given at one inoculation. If it were not for the reactions the whole dose of the salt suspension vaccine might also be given at one sitting. The usual seven day interval need not be adhered to strictly. It has been claimed that inoculations given every twenty-four hours are equally effective. In cases where an unexpected journey abroad leaves only a short period for immunization this fact may be taken advantage of.

The reaction to typhoid vaccination is largely dependent upon where the vaccine is placed. If it enters a vein the reaction is sharp and alarming. If it enters a muscle the reaction is disagreeable and sometimes sickening. The mildest reactions follow careful administration of the vaccine in a position exactly beneath the skin. An eminence raised at the point of inoculation which persists for some time is said to indicate correct administration.

Proceedings of Societies

Virginia State Board of Medical Examiners.

At the meeting of the Board, held on December 11-13, 1935, the following applicants successfully passed the examination:

Dr. Herman Sumner Freedman, New Haven, Conn.
Dr. Maxwell Herschel, Covington.
Dr. Louis John Saxe, University.
Dr. Randloph Beaton Turnbull, Sanatorium.
Dr. Robert S. Turner, New York, N. Y.
Dr. Edward William Wallace, Ballston.
Dr. Ayer Crouch Whitley, Ramseur, N. C.

Dr. Albert I. Pincus, Philadelphia, Pa., successfully passed the examination on Chiropody.

The following were granted licenses through reciprocity:

Dr. James Adlai Brown, Jr., Portsmouth.
Dr. Oren Douglas Boyce, Rural Retreat.
Dr. George Hopkins Carr, Jr., Portsmouth.
Dr. Robert Miller Cochrane, Dahlgren.
Dr. Paul Marion Crossland, Dahlgren.
Dr. Challis Haddon Dawson, Suffolk.
Dr. William Penn Frazer, Hamilton.
Dr. Ray Huddle Grubbs, Shenandoah.
Dr. Walter Paul Hammer, West New York, N. Y.
Dr. Esther Handcock, Staunton.
Dr. Alger Bernard Harrison, Franklin.
Dr. Frank Hill Hedges, Jr., Richmond.
Dr. Benjamin Ervin Hodge, Richmond.
Dr. Ralph Willis Jack, Farmville.
Dr. Carl Ludwig Knitter, Jr., Chincoteague.
Dr. George Walne Leavell, Bristol, Tenn.
Dr. John E. Looney, Grundy.
Dr. Edward Bruce Mewborne, Newport News.
Dr. John Glen McNiel, Pennington Gap.
Dr. Thomas Andrew Moneymaker, Alexandria.
Dr. Joseph Walter Neal, Jr., Greensboro, N. C.
Dr. John C. Palmer, The Plains.
Dr. Harry Howard Pope, Ivanhoe.
Dr. Julian Lorraine Price, Bristol, Tenn.
Dr. Russell Edward Reid, Portsmouth.
Dr. Carol Margaret Rice, Sweet Briar.
Dr. Gregory Washington Snead, Jr., Martinsville.
Dr. Warren Hooper Sears, Springfield, Mass.
Dr. Wendell Michael Steele, Richmond.
Dr. Milton Robert Stein, Clintwood.
Dr. Mark Thumin, Alexandria.
Dr. James Franklin Waddill, Norfolk.
Dr. William Christopher Williams, Greensboro, N. C.
Dr. Loyal C. Wray, Clintwood.

The Northern Neck Medical Society

Held its semi-annual meeting at Irvington, Va., October 24, 1935. The Society convened at noon with Dr. R. E. Booker, of Lottsburg, Va., presiding.

The following officers were elected for the ensuing year: Dr. L. S. Liggan, of Irvington, president; Dr. M. C. Oldham, of Lancaster and Dr. C. Y. Griffith, of Mt. Holly, vice-presidents; and Dr. E. T. Ames, of Montross, secretary-treasurer.

Interesting papers were read by Dr. R. T. Pierce, Jr., of Newport News, Va., on Spontaneous Subarachnoid Hemorrhage, and Dr. E. R. Moorman, of Kilmarnock, Va., on Interstitial Keratitis of Syphilitic Origin. The following physicians gave case reports: Dr. B. H. B. Hubbard, of White Stone, Dr. C. T. Pierce, of Litwalton, Dr. R. E. Booker, of Lottsburg, Dr. A. I. Dodson, of Richmond, Dr. D. G. Chapman, of Richmond, Dr. Wallace Gill, of Richmond, Dr. W. L. Peple, of Richmond, and Dr. Powell Williams, of Richmond, after which there was a round-table discussion, entered into by most of the local and visiting physicians.

Resolutions were adopted on the deaths of Dr. B. A. Middleton, of Emmerton, Dr. Mason Smith, of Fredericksburg, and Dr. H. J. Edmonds, of Kilmarnock.

After the scientific session, about twenty-five physicians remained for the banquet at the Irvington Beach Hotel.

The next meeting of the Society will be on the fourth Thursday of May, at Warsaw, Richmond County, Virginia.

The Northampton County Medical Society.

At the meeting of this Society, held on January 3rd, Dr. J. Morrison Hutcheson, Richmond, President-elect of the Medical Society of Virginia, spoke on "The Rationale of the Application of Certain Surgical Measures to the Relief of Hypertension"; and Dr. Beverley R. Tucker, Richmond, spoke on "Neurological Aspects of Pellagra."

The following officers for 1936 were elected: President, Dr. J. M. Lynch, Cape Charles; vice-president, Dr. Griffin W. Holland, Eastville; secretary-treasurer, Dr. W. Carey Henderson (re-elected), Nassawadox; and Board of Censors, Dr. W. J.

Sturgis, Chairman, Nassawadox, Dr. S. K. Ames, Cape Charles, and Dr. J. W. Jackson, Machipongo.

Visitors from the Accomac Medical Society were Dr. John Robertson, Onancock; Dr. J. L. DeCormis and Dr. J. F. Edmonds, Accomac; Dr. J. H. Hiden, Pungoteague; Dr. Rooker White, Keller; and Dr. Ira Hurst, Parksley.

Accomac Medical Society.

The Accomac Medical Society held its annual election of officers on December 12, 1935, at which time Dr. Alva Mathews, Oak Hall, was elected president, and Dr. John W. Robertson, Onancock, vice-president and secretary-treasurer.

It was decided to hold the annual banquet in the Accomac Hotel on January 17, 1936, the ladies being invited for this occasion.

The Patrick-Henry Medical Society

Held its regular quarterly meeting in January at the Riverside Hotel, Bassetts, Va. Dr. John E. Gardner, of Roanoke, Va., gave a paper on "The Diseases of the Chest" which he illustrated by X-ray films. Dr. M. A. Sweaney, of the S. C. C. of Ridgeway, was a visitor. Dr. B. F. Noland, Dr. C. P. Smith and Dr. R. P. Fagg were elected as honorary members of the Society. The next meeting will be held at Martinsville, Va., in April.

Officers of the Society are: President, Dr. A. W. Rucker, Fieldale; vice-president, Dr. D. L. Fleshman, Bassetts; secretary-treasurer, Dr. C. R. Titus, Bassetts.

Floyd County Medical Society.

Officers of this Society elected for the year 1936 are: President, Dr. S. T. Yeatts, and secretary-treasurer, Dr. F. Clyde Bedsaul, both of Floyd, Va. The Society holds two meetings each year, these being in July and December.

The Lynchburg Academy of Medicine

Met in regular session on January 6th. The new officers, Dr. J. Henry Rawlings, president, and Dr. John Wyatt Davis, vice-president, were installed at this meeting, and Dr. John Hundley, Jr., was renamed as secretary-treasurer. Drs. Edwin A. Harper and C. E. Keefer, both of Lynchburg were elected to membership in the Academy.

Dr. Fred Hodges, of Richmond, presented a very interesting address on "Roentgen Therapy," illustrated with slides, and stressing the X-ray treatment of infection.

Roanoke Academy of Medicine.

The regular meeting of the Academy was held on January 6th, and the following papers were presented: Interpretation of Changes in the Eye Grounds by Dr. Charles A. Young; The Heart Valves—Normal and Pathological Considerations by Dr. J. E. Gardner; and The Clinical Significance of Auricular Fibrillation with Electrocardiograms by Dr. Harry Golston. Dr. M. A. Johnson also presented several cases.

Attention was called to the fact that the Academy broadcasts over WDBJ each Wednsday afternoon at 6:25.

News Notes

Appointed to Council of Southern Medical Association.

Dr. Vincent W. Archer, University, has been appointed a member of the Council of the Southern Medical Association from Virginia for a regular Council term of five years, the appointment having been announced recently by the President, Dr. Fred M. Hodges, of Richmond. Dr. Archer succeeds Dr. R. Finley Gayle, Jr., of Richmond, who, having served the constitutional limit, was not eligible for reappointment.

A Postgraduate Institute,

Offering an intensive and interesting study of the newer work in the field of cardio-vascular and renal diseases, will be conducted by the Philadelphia County Medical Society during the week of April 20th to 24th, inclusive.

The program, to be held in the Bellevue-Stratford Hotel, Philadelphia, has been designed to meet the needs of all members of the profession, but particulary those in general practice. Physicians from all parts of the eastern and east-central United States are invited to attend.

Lecturers, about thirty in number, have been selected from among the foremost teachers in this great center of medical education. The medical faculties of the University of Pennsylvana, Jefferson, Temple, and Woman's Medical College of Pennsylvania are represented on the program. While approaching the subject from specialized viewpoints—those of the physiologist, cardiologist, pediatrician, surgeon, roentgenologist, bacteriologist, internist—the presentations will be of a strictly practical nature, and should be of real value to the general physician, who finds cardio-renal conditions occupying a large proportion of his time.

The Philadelphia County Medical Society, in conducting the Postgraduate Institute, is meeting the demands of many physicians, who have felt the organized profession should provide them with this type of opportunity for keeping abreast of medical progress and thus maintaining the highest standards of medical service. The only charge is a $5.00 registration fee to cover the Institute's expenses. It is hoped to make the event an annual one, giving special attention each year to a different subject.

Married.

Dr. John Glen McNiel, Pennington Gap, Va., and Miss Mary Roberta Kuyk, Richmond, Va., December 28th.

Dr. Charles Walton Purcell, University, Va., and Miss Cleo Virginia Ashby, Raleigh, N. C., in January.

The Gill Memorial Eye, Ear and Throat Hospital,

Roanoke, Va., announces that its tenth annual Spring Graduate Course in Ophthalmology, Otology, Rhinology, Laryngology, Facio-Maxillary Surgery, Bronchoscopy and Esophagoscopy will be held April 6-11, 1936. Guest members of the faculty are Drs. John A. Kolmer, James A. Babbitt, Robert H. Ivy, Walter I. Lillie, and J. Milton Griscom, all of Philadelphia; Dr. Wells P. Eagleton, Newark, N. J.; Dr. Perry G. Goldsmith, Toronto, Canada; and Dr. Meyer Wiener, St. Louis, Mo.

In order that each matriculate may receive individual instruction and personal contact with the instructors, the class will be limited to fifty. For information, write the Superintendent, Gill Memorial Eye, Ear and Throat Hospital, Box 2467, Roanoke, Va.

The Southeastern Surgical Congress

Will meet in New Orleans, March 9-11, 1936. A number of prominent surgeons are included on the program, and the meeting promises to be one of unusual interest.

Further information may be secured from Dr. B. T. Beasley, secretary-treasurer, 1018 Doctors Bldg., Atlanta, Ga.

Dr. J. E. Gladstone,

Class of '34, University of Virginia, Department of Medicine, recently located at Exmore, Va., is now connected with the Civilian Conservation Corps, at Elkton, Va.

On Kiwanis Committees.

Dr. W. E. Croxton and Dr. M. H. Harris, both of West Point, Va., have been named as members of important committees of their club for the coming year.

Dr. Q. H. Barney

Has been elected health officer of Alta Vista, Va., and community, to succeed the late Dr. J. Arnold Board.

Dr. F. T. Hauser,

Formerly of Bland, Va., but more recently with the Civilian Conservation Corps, is now located at Station Hospital, Fortress Monroe, Va.

Dr. R. L. Hudnall,

Beverlyville, Va., was elected as a member of the board of supervisors of Northumberland County, at a meeting held in Heathsville in January.

Dr. Charles N. Eckerson,

Of the class of '35, Medical College of Virginia, who later interned at the Holy Name Hospital, Teaneck, N. J., is now located at Cameron, N. C., where he is engaged in general practice.

Dr. Herbert C. Jones,

Petersburg, Va., was recently elected first vice-president of the Chamber of Commerce of that city.

Annual Report of the U. S. P. H. S.

In the annual report of the public health of the United States, the Surgeon General of the U. S. Public Health Service states that health conditions in general remained good during the year ended June 30, 1935. The preliminary death rate for the calendar year 1934 was 10.9; the birth rate increased, being 3 per cent higher than in 1933, but

the infant mortality rate was slightly increased in 1934 as compared with 1933.

The death rates from typhoid fever and diphtheria were both 3.3 per 100,000 population. In 1900 the death rate for typhoid fever was 35.9 per 100,000 and the diphtheria death rate was 43.3. This means that there were 91,000 fewer deaths from these two causes in 1934 than would have occurred if the 1900 rates had prevailed.

The tuberculosis death rate continued to decrease, the 1934 rate being the lowest ever recorded.

The U. S. Public Health Service has also done a great deal of research work, covering the cause and prevention of disease, etc.

Dr. James W. Hunter,

Norfolk, Va., announces the removal of his office to 405-7 Medical Arts Building, and that he will limit his practice to diseases of the heart and to X-ray diagnosis.

Dr. B. H. Knight,

Surry, Va., has recently been elected to head the first aid of the Surry County Red Cross.

Petersburg (Va.) Hospital Physicians Staff.

Dr. Ruth Mason-Grigg was recently elected chairman of this staff to succeed Dr. W. M. Bowman. Other officers are Dr. Leta J. White, vice-chairman; Dr. H. Cantor, secretary; and Dr. E. W. Perkins, Jr,. vice-secretary. Other official groups are headed by Dr. Fletcher J. Wright, medical section; Dr. J. Bolling Jones, surgical section; Dr. J. D. Osborne, X-ray section; and Dr. D. D. Willcox, eye, ear, nose and throat section.

Dr. John W. Bowdoin,

Bloxom, Va., has recently been appointed by the board of supervisors as superintendent of public welfare for Accomac County.

George Washington University Postgraduate Clinic.

The Fourth Annual George Washington University Postgraduate Clinic will be held in Washington, D. C., on Saturday, February 29th, at the University Hospital from 9:00 A. M. to 4:30 P. M. All physicians who are interested are cordially invited to attend the meetings.

Dr. Lee S. Liggan,

Irvington, Va., has been elected chaplain of the Odd Fellows Lodge of that place for the year 1936.

New York Polyclinic Medical School and Hospital.

At a meeting of the Clinical Society held on January 6, 1936, the following program was presented: (1) "Surgical Treatment of Primary Carcinoma of the Lung" by Richard H. Overholt, M. D. (Lahey Clinic, Boston, Mass.). The discussion was opened by Howard Lilienthal, M. D., Chevalier Jackson, M. D., and Pol N. Coryllos, M. D. (2) "Surgical Management of Prostatic Obstruction" by Joseph F. McCarthy, M. D. The discussion was opened by Oswald S. Lowsley, M. D., Abraham Hyman, M. D., Clarence G. Bandler, M. D., and Daniel A. Sinclair, M. D.

Dr. Russell L. Cecil gave an afternoon lecture on Wednesday, January 22nd on "Backache."

Dr. John W. Simmons,

Martinsville, Va., was recently presented with a cane by physicians of that town, in recognition of his completion of fifty years of medical service.

Dr. B. J. Atkinson,

North Emporia, Va., has been appointed chairman of the Public Health Committee of the Emporia Chamber of Commerce for the present year.

Dr. Jesse Bruce Hopkins,

Richmond, Va., a first lieutenant in the Medical Corps Reserve, has, with his consent, been ordered to active duty for a period of six months, effective January 6, 1936, and is with the Civilian Conservation Corps, at Big Stone Gap, Va. Dr. Hopkins is a member of the class of '33, Medical College of Virginia.

Laboratory Technicians Honored.

Mrs. Helen Doswell Gates and Miss Lucy Robinson, technicians at the Stuart Circle Hospital, Richmond, Va., under the direction of Dr. Regena Cook Beck, have both received the degree of laboratory technologist, conferred by the American Society of Clinical Pathologists. This is the highest degree given to persons engaged in technical laboratory work and is given for outstanding service rendered in any of the branches of clinical pathology by research, teaching and scientific endeavor.

Dr. A. H. Deekens,

Recently of Richmond, Va., after spending several months at Kilmarnock, Va., has left for New Orleans, La., where he will be located at 1531 Ex-

position Boulevard about March 1st, for special work.

Dr. Francis H. McGovern

Has recently located in Danville, Va., where he is associated with Dr. M. H. Watson in the practice of diseases of the eye, ear, nose and throat. Dr. McGovern is a graduate of the University of Pennsylvania, class of '32, and recently completed a two-year residency in his specialty at the University of Virginia Hospital.

Dr. S. A. Draper,

Recently of Christiansburg, Va., located in Roanoke, Va., the first of this month, with offices at 801 Carolina Avenue, South.

Appointment of Senior Medical Internes for the U. S. Public Health Service.

The U. S. Public Health Service will consider applications to fill a number of vacancies which exist at the present time and also vacancies which will occur about July first next, for second-year medical internes. Any young physicians, not over thirty years of age, who have graduated from a Class "A" medical college and who have completed, or will shortly complete, one year's interneship in an approved hospital are eligible to apply.

The Public Health Service also desires to secure applications only from candidates who are interested in the Service as a career. Those interested should address an inquiry to the Surgeon General, U. S. Public Health Service, Washington, D. C., stating the date they will be available for duty and more complete information and the necessary blanks upon which to make application will be furnished.

Dr. Driscoll Honored.

Dr. T. Latane Driscoll, Richmond, Va., was elected honorary grand vice-president of Alpha Kappa Kappa, international medical fraternity, at its quadrennial convention held in Richmond early in January.

Dr. William Reese,

Petersburg, Va., was elected vice-president of the Kiwanis Club, of that city, at its meeting in December. Dr. George H. Reese, retiring president, was named as chairman of the public welfare committee.

Dr. Robert H. Detwiler,

Who graduated from Georgetown University, Washington, D. C., in 1933, has located at Clarendon, Va. He interned at Georgetown University Hospital and later had a residency at a hospital in Wilmington, Del. He is now connected with the Children's Hospital, in Washington, D. C.

Dr. Milford M. Greenbaum,

Class of '34, Medical College of Virginia, who interned at the Morrisania City Hospital, New York, and later at the Paterson General Hospital, Paterson, N. J., announces the opening of his office for the practice of medicine and surgery at 1254 Grant Avenue, near 167th Street, Bronx, N. Y.

Physician Wanted.

A physician is needed at Amissville, Va. A settled man with experience preferred. A fine opening for the right man as there is plenty of work to do. For further information, write Mr. James C. Cropp, Amissville, Va. (*Adv.*)

For Sale—

Physician's used equipment, instruments, and diatherm. Address No. 175, care the VIRGINIA MEDICAL MONTHLY, 1200 E. Clay St., Richmond, Va. (*Adv.*)

Specialist Wanted.

Physician specializing in diseases of the eye, ear, nose and throat needed in good locality in Virginia. Address "Specialist," care this journal. (*Adv.*)

Young Physician Wishes Temporary Work.

Physician completing residency on April 1st, wishes to secure temporary work in general practice or diseases of children for April, May and June. For information, write "Y. P. W." care this journal. (*Adv.*)

For Sale—

Physician's McCaskey System in good condition. Price reasonable. Address "McCaskey" care VIRGINIA MEDICAL MONTHLY. (*Adv.*)

For Sale—

Gas-oxygen outfit. Portable. For obstetrics and minor surgery. In first class condition. Price reasonable. Address "Oxygen," care this journal. (*Adv.*)

Obituary Record

Dr. Walker Aylett Campbell,

Old Church, Va., died January 21st, at his home in that place. He was born at Enfield, Va., sixty years ago and, after completing his academic education, studied medicine at the former University College of Medicine, Richmond, Va., from which he graduated in 1903. He had been a member of the Medical Society of Virginia since 1904. He is survived by his wife and seven children.

Dr. Francis Vaughan Fowlkes,

Well-known to many Virginia doctors as a representative of Mead Johnson and Company, died January 20th, after a short illness, though his health had not been good for several years. Death followed a paralytic stroke which he suffered several days earlier. He was a native of Amelia County, Virginia, and sixty-eight years of age. He was graduated in medicine from the University of Maryland in 1887. His wife and four children survive him.

Dr. Isaac Scott Stone,

Well-known surgeon of Washington, D. C., died December 22nd, at his home in that city, after an illness of several months. Born in Sandy Spring, Md., in 1851, he graduated from the University of Maryland in 1872 and practiced medicine in Lincoln, Loudoun County, Virginia, for several years before moving to Washington in 1890. He became a member of the Medical Society of Virginia in 1884 and was made an honorary member in 1904. He had always been an interested member and attended most of its sessions until he retired from active practice. For thirty years before his retirement from active practice, Dr. Stone served on the staff of Columbia Hospital for Women as attending surgeon and was also professor of gynecology in Georgetown University. He was a fellow of the Royal Society of Medicine, London, a fellow of the American College of Surgeons, and a member of other medical and surgical societies, and the author of many papers in the field of medicine and surgery. He held the degree of Sc.D. from the University of Maryland and LL.D. from Georgetown. Dr. Stone was one of the founders of the Southern Surgical Association and in 1918-19 its president.

Surviving him are three children.

Dr. Charles W. Gleaves,

Wytheville, Va., died December 12th, at the age of eighty. He graduated from the Medical College of Virginia in 1879, and practiced medicine for a number of years following his graduation. For the past thirty years he had been in banking business, and was president of the First National Farmers Bank of Wytheville. Four daughters survive him.

Dr. Edward B. Heckel,

Well-known ophthalmologist of Pittsburgh, Pa., died December 23, 1935, of pneumonia. He was seventy years of age and received his medical education at the Bellevue Hospital Medical College from which he graduated in 1890. Dr. Heckel was a former chairman of the Board of Trustees of the American Medical Association and was also a member of the House of Delegates of that Association. He was a member of many ophthalmological societies and served as president of the Pittsburgh Ophthalmologic Society for fifteen years.

Dr. William Roffin Goley,

Shallotte, N. C., died November 12, 1935, at the age of fifty-eight. He was a graduate of the former University College of Medicine, Richmond, in 1901.

Dr. Edgar Stuart Estes,

St. Augustine, Fla., died of heart disease, December 6, 1935. He graduated from the University of Virginia, Department of Medicine, in 1905. Dr. Estes was formerly city health officer at St. Augustine.

Dr. George W. Richardson,

West, Point, Va., died suddenly as a result of a stroke of apoplexy, December 29, 1935. He was seventy-six years of age and graduated from the Medical College of Virginia in 1880.

Dr. Nathan Porter Colwell,

Formerly secretary of the Council on Medical Education and Hospitals of the American Medical Association, died at his home in Wilmette, Ill., January 6th. He became the first secretary of the Council in 1906 and served until his retirement in 1931.

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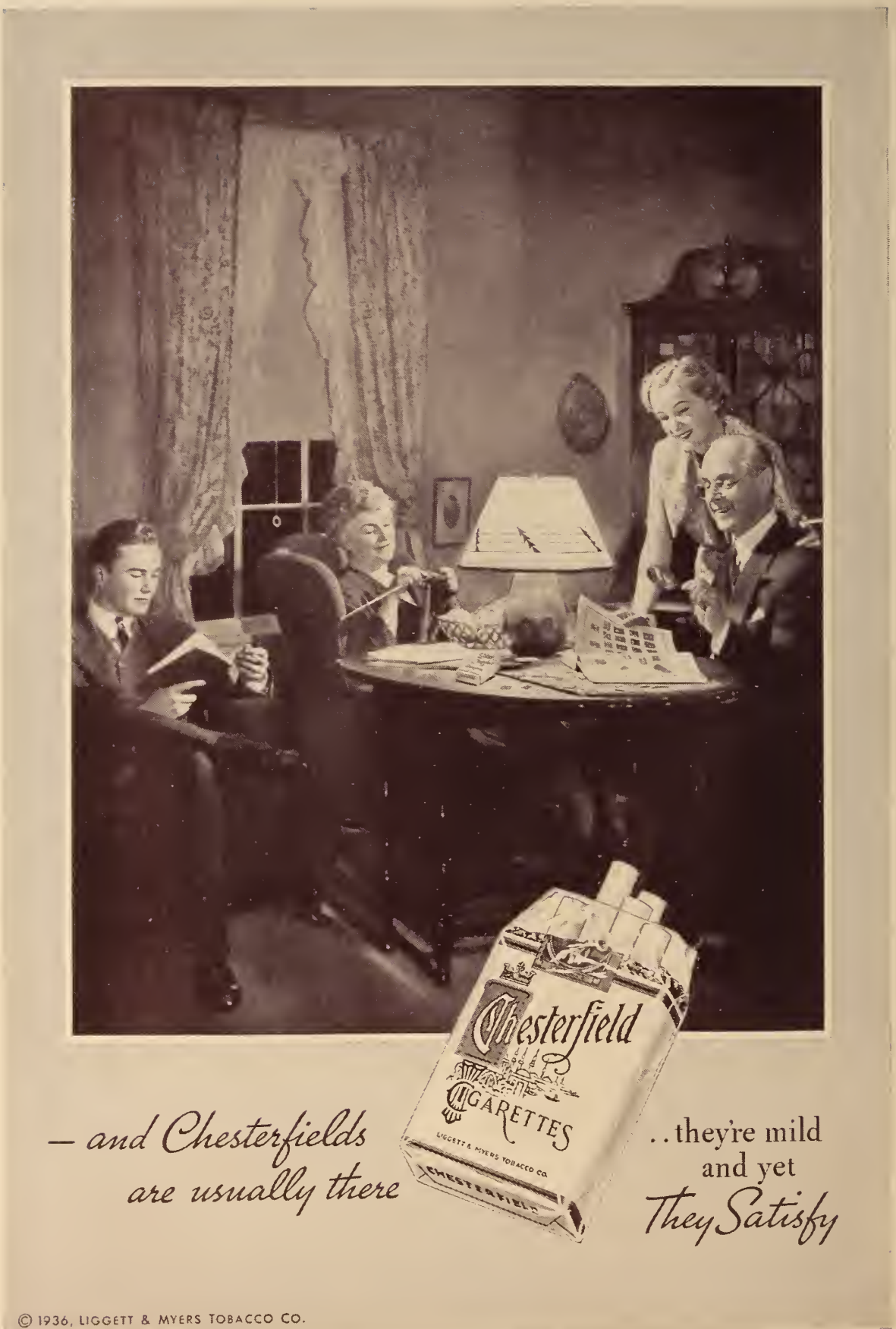

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HEART DISEASE COMPLICATED BY PREGNANCY.*

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In selecting the title "Heart Disease Complicated by Pregnancy," I am bringing to you a rather well-worn subject. Moreover, I am not attempting to bring you anything new. I desire rather to restate and to emphasize some old truths and particularly some features relating to the prognosis and treatment of the condition which, in my experience, seem to have been either ignored or forgotten by many of our colleagues who are engaged in that type of general practice which includes obstetrics.

All of us who have any large experience in consultation work in obstetrics are acquainted with the neglect in many districts and by many practitioners of the prenatal care which every woman should have if her pregnancy and labor are to be carried to the best possible conclusion. There are still many districts in which the pregnant woman is not seen by the physician until she is actually in labor. This fact precludes the possibility of recognition of the hemorrhages or toxemias or heart disease or any of the chronic conditions which may lead to premature delivery and death of both mother and child. It also precludes the possibility of foreseeing difficult labors which might easily be avoided and which may lead, if not to death of the mother, to operative delivery which may leave in its wake infection of the mother or permanent damage to the birth canal or to death or disability of the child.

There are, in my own state, counties in which the majority of women, both white and black, are delivered by negro midwives, and there are districts in some of these counties in which 90 per cent of the women—white and black—are delivered by midwives and are never seen by a physician except *in extremis*. Indeed, such districts are not confined to the tidewater counties of the State of Maryland, although largely so. The same prenatal neglect may be found in many city districts and in many so-called well-to-do country districts where practically all cases—white and black—are delivered by physicians. This is a matter much to be regretted but those of us who are engaged in clinical teaching and in the operation of outdoor clinics are constantly seeing cases grossly neglected in the matter of prenatal care which have given evidence for weeks or months, if there was anyone interested enough to notice, of warnings of serious pathological changes in the maternal organism.

In no particular has prenatal care been neglected so much as in the matter of pregnancy complicating heart disease. Even an ignorant negro midwife might recognize some of the symptoms of toxemia. She certainly could be taught to report hemorrhage but she would never recognize the milder types of heart disease or, in most cases, even the rather advanced types. The ignorant midwife is not alone in this failure to recognize this condition. A large number of our medical brethren are quite satisfied, even when they attempt prenatal care, to make a diagnosis of pregnancy, to examine urine for albumin and sugar, to take an occasional blood pressure and, in the absence of marked edema or albumin and sugar in the urine or an outright complaint on the part of the patient of excessive breathlessness or pain, to abstain from a general physical examination of the patient or to obtain satisfactory histories of their patients. By so doing, they miss practically all of the heart cases except the most severe type which will usually, by the very inspection of the case, suggest an examination resulting in a proper diagnosis.

*Read before the Seaboard Medical Association of Virginia and North Carolina at Old Point Comfort, Va., December 3-5, 1935.

The only safe procedure, then, is to make a general examination of the patient early in pregnancy so that any inefficiency of the heart may be determined early and a proper prognosis made and proper measures of advice and treatment instituted.

Even if heart disease is recognized, the case may still be neglected. One has often heard such an expression as this—"I have quit worrying about my heart cases in pregnancy. They always get along all right." I can remember when I felt a little that way myself. What is meant by such a remark is that none of such patients, even those of an advanced type, have died in child-birth. A proper follow-up of these cases would, in most instances, produce a very different frame of mind. The man who does not worry about his heart cases in pregnancy is one who has not had much experience with them.

One of the great difficulties in these cases is that the obstetrician sometimes forgets that the heart case is a medical problem and that the medical man forgets that it has also a definite obstetrical problem. Few obstetricians know enough about the physiology and pathology of the heart and few physicians have enough obstetrical experience to properly advise patients. Instruction in medical schools probably leaves something to be desired in this direction. Sir James Mackenzie[1] some fourteen years ago made the following observations:

"There is a physiologic problem involved but no physiologist has attempted its solution. There are problems intimately connected with clinical medicine yet physicians have no opportunity for studying the pregnant woman. The obstetrician sees her but no obstetrician has yet learned the elements of cardiac symptomatology sufficiently to enable him to acquire the necessary information. Here is a problem of first importance which will time and again confront every general practitioner and in the whole hierarchy of a medical school there is not one teacher or even group of teachers capable of acquiring far less of imparting the necessary knowledge."

This is not quite so true today as it was when written but our present knowledge, teaching and practice leave something to be desired.

Incidence. That this is not an unimportant matter is shown by the incidence of these cases. It is variously stated that the incidence is from 1 to 3 per cent of all cases. (Williams[2] 1 to 2, Newell[3] 3 per cent.) This includes cases of all degrees of severity and embraces all pathological changes in the heart. The recognized incidence in each man's practice will, of course, depend entirely upon the care with which he examines his cases. The careless man will find few, sometimes none, the careful man will find more; the consultant will find still more, and those who are engaged in a teaching clinic or a large hospital service will find still more. The unfortunate thing is that in the teaching clinic or in a large hospital clinic or in the experience of a consultant, the cases seen are usually of the severer type and not infrequently include many cases which have been neglected through previous pregnancies, sometimes as many as two or three, and are seen only when definite acute decompensation has developed. When patients are seen in this condition, it is entirely obvious that they do not offer the practitioner the same opportunity to carry his case through to a successful conclusion and that his serious morbidity incidence will be greatly increased as will his mortality rate.

Mortality. The mortality in this condition is given variously as from 5 to 10 per cent of all the deaths due to pregnancy. In large clinics it may run much higher and is due not only largely to the previous neglect of many of the cases seen but also to the fact that these clinic cases frequently show other complications which help to increase the mortality. Hart[4] in one series of cases with mitral stenosis reports a mortality of more than 80 per cent. Low mortality rate will depend upon early recognition, early beginning of prenatal care, the immediate recognition of heart failure, proper institution of treatment, and intelligent supervision during labor and puerperium.

"In pregnant patients with cardiac disease, it is most essential that particular attention be paid to the first appearance of the slightest sign indicating cardiac embarrassment or decompensation and that in arriving at a proper evaluation of the power of the heart due recognition to the growing demand of pregnancy be given. From the fourth month of pregnancy to full term there is a steady increase in cardiac output amounting to over 50 per cent of the normal rate"—(Stander[8]).

It is fairly well established that women who have had decompensation before pregnancy occurs or who have attacks early in pregnancy or several attacks during pregnancy, furnish the greatest mortality rates regardless of the pathological lesions in the

heart. The mortality of children in these cases is also a most important consideration. Probably not more than 50 per cent of the advanced types go to full term, and a large percentage of the children are born dead, another large percentage premature (who die shortly after birth), so that carrying one of these cases to full term does not promise enough from the standpoint of the preservation of the child to take too great a chance on the mother's health and life.

Etiology. Cabot[5] gives four common types of heart disease. Ninety per cent of all cases are due to rheumatism, syphilis, hypertension, arteriosclerosis, and 10 per cent due to toxemia, infection, thyroid, congenital conditions, etc. Certainly all authorities agree that the vast majority of these cases the obstetrician is called upon to visit are the result of rheumatism. When, in taking the previous history of the case, it is found to include rheumatism, a most careful determination should be made of the ability of the heart to care for the demands made upon it not only by the ordinary occupation of the patient but also additional demands made by pregnancy.

Pathology. When one investigates this phase of the question, all but the pathologist or the internist are at once overwhelmed by the variety of lesions and conditions which are presented—inflammations of the endocardium, myocardium, pericardium, all conditions of insufficiency of the valves, hypertrophy and dilatation, murmurs which are described with meticulous care as to intensity, character, and location. All of this pathology with the conditions of insufficiency which are produced are interpreted in the matter of prognosis. We are told that simple mitral regurgitation gives us our lowest and that mitral stenosis gives us our highest mortality, that double mitral murmur is the most apt to eventuate in acute decompensation, that a combination of mitral and aortic lesions gives us our highest mortality, that auricular fibrillation is a bar to pregnancy, and that a well-compensated heart generally carries the patient through pregnancy and labor fairly satisfactorily. These and many other truths concerning pathology and prognosis, based on pathological lesions, are interesting and helpful but they are not the things which I intend to discuss: First, because I am not as well qualified to discuss them as I would like, and, second, because I want to discuss some other things—chiefly the social and economic conditions related to heart disease in pregnancy and labor and the treatment of cases of heart disease complicated by pregnancy.

In the matter of prognosis, how are we to arrive at it? One must have some basis upon which to build a prognosis and a plan of treatment. It is always important to remember that there is a distinct difference between the recognition of a pathological condition and its interpretation from the standpoint of prognosis,—also that there is no general standard for reserve heart power but that this is an entirely individual characteristic both in normal and diseased hearts. If we will keep in mind at all times that the first sign of heart failure is the diminution of the power of the heart to respond to effort and that all patients are not called on for the exercise of the same amount of effort, and that some patients are not able, on account of social or economic conditions, to limit effort as are others, we will at least begin to find a basis upon which we formulate our advice, prognosis and treatment.

The classification here presented which divides all patients into definite groups in relation to their several abilities to undergo exercise is already well known to you. It is the classification generally adopted,—it is as follows:

I. Those who are able to perform ordinary and usual physical activity without unusual fatigue, palpitation or dyspnea.

II-A. Those who are able to perform the usual physical activity but who have discomfort in so doing.

II-B. Those who are unable to perform the more difficult features of ordinary physical activity without stopping on account of fatigue, shortness of breath, or palpitation.

III. Those who are unable to perform the simplest activity without fatigue or shortness of breath or palpitation.

A sane, simple, and workable classification.

The second factor in prognosis and treatment embraces the social and economic conditions which surround the patient. The following are some of the factors which this will introduce:

1. Whether she has other children.

2. Whether the woman is in a position to accept and carry out instructions. This will depend upon whether she has an income sufficient to refrain from as much as is necessary of housework or other

labor or responsibilities, including the care of other children.

3. Whether she is willing and intelligent enough to cooperate.

Another important factor is whether there are other complications, such as nephritis or other chronic conditions, or abnormalities of the birth canal which may give rise to complications in labor not so embarrassing to a normal heart, but which might put upon a diseased heart an altogether too great strain.

The following are some of the questions relating to pregnancy which are apt to arise in the matter of heart disease:

A. Should a patient with heart disease marry?
B. If married, should she become pregnant?
C. If pregnant, should she be carried to full term?
D. If she is to be carried to full term, of what should the prenatal treatment consist?
E. If she shows signs of acute decompensation, how should we meet the situation?
F. If we decide to terminate pregnancy, when should we do it, and how?
G. If she reaches full term, how should she be delivered?
H. When she has been delivered, what may we expect of the puerperium?
I. Should she be sterilized?

There are many writers who believe that many women with so-called *physiological* murmurs go through pregnancy and labor without damage. It is true that some of them seem to do so, but the reverse of this picture is so generally true that we begin to wonder if it is not universally true, and agree with Newell[3] that a woman with cardiac involvement pays some price in length of days for her child.

It is well established that pregnancy makes a greater demand upon the normal heart reserve because of the greater amount of work involved (Stander[8]) and still further embarrasses the normal heart by the displacement of the heart due to the increased intra-abdominal pressure exerted upon the diaphragm. If this be true of the normal heart, how much more is it true of the heart already crippled which has less chance to respond to the demands of pregnancy and the work involved in labor? It is true that in the great majority of cases women who are able to assume the ordinary duties of the home without any serious trouble will go through a pregnancy and labor without dying and in most cases without serious decompensation; but one usually finds in these cases that in subsequent pregnancies and labors they are not so lucky and that a progressive advance in the cardiac involvement is usually present.

Advice. Bearing in mind always that unnecessary restrictions should not be imposed upon women who are pregnant, and assuming that otherwise a women is in good condition with no pelvic complications, with no chronic diseases further complicating the heart disease and pregnant condition, but from the standpoint of her cardiac difficulty is in Group III, I think we might assume in answering the first two questions that the answer would be in the negative. Women in Group III probably would have no business marrying. The question might also be answered "no" for Group II-B. These women are not able to support the strain of marriage and the control of a house or the bearing and raising of children. In the first two groups there is probably no reason why they should not marry and, under certain circumstances, those in Group II-A might be allowed to have children. Those in Group I might certainly be allowed to have at least one pregnancy and labor. In these cases, even in Groups I and II-A, no woman, if she is to be advised, should be allowed to marry and become pregnant without having had explained to her in no unmistakable terms the responsibility which childbearing would entail and the dangers which might arise. Certainly the woman who is in Group II-A should think well before she undertakes pregnancy and labor. The difficulty in these cases is that the doctor's advice is frequently not asked and, if asked and given, is not followed. However, in cooperative cases much assistance can be given by a careful review of the dangers which arise from pregnancy and labor.

In answer to the third question, patients in Group I certainly may be carried to full term. Patients in Group II-A can mostly be carried to full term under careful supervision. Patients in Group II-B may also, under the most rigid supervision and almost constant rest and hospitalization, be carried to full term or near it—at least until the period of viability. Cases in Group III should unquestionably have pregnancy terminated as soon as the diagnosis is made.

One of the great mistakes which is made by physicians and patients is that a proper understanding is not arrived at of the meaning of the word "rest." To the average lay individual, particularly if she is a woman who has a household to look after and some other children, rest means perhaps sitting down or even lying down in the afternoon for one-half hour, or one hour, fully dressed, but not actually working, with her children about her, the responsibilities of her household upon her, and in no wise relaxed or relieved from the responsibilities of supervision. It must be made clear to these people that when you say "rest" you mean absolute isolated rest—complete isolation—the patient undressed, thoroughly relaxed, and no bother from any source—husband, friends, children, or servants. This rest must be increased in direct proportion to the gravity of the case. In Group I it need not be so long continued or so frequently indulged in. In Group II-A there should be certainly definite periods of rest every day of sufficient length to prevent the patient feeling exhaustion or even fatigue. In Group II-B, if the patient is to be carried to full term, then there must be absolute relief from all work and responsibility. No attempt must be made by the women of this group to do anything but bear, as best they may, under rest and digitalization and sedatives, the burden of pregnancy. In Group III, as we have said, pregnancy should be terminated and no attempt made to carry the woman to full term.

The answer to question E—"if she shows signs of decompensation, how do we meet the situation" —is complete, absolute rest, active digitalization, morphia to relieve pain, and, if we are expecting to carry the women to full term, to relieve the contractions of the uterus which, in some of these cases, start quite easily. The patient should remain in bed, preferably in a hospital, until well past the time of recovery from her acute decompensation. If this happens early in pregnancy, she probably belongs to one of the groups who should not be carried to full term, or even to the period of viability. If it happens later in pregnancy, she may have the benefit of rest, hospitalization, and other proper therapeutic measures until it can be determined whether or not she belongs to one of the groups which may be carried to full term or have her pregnancy terminated.

The next question is—"if we decide to terminate pregnancy, when should we do it, and how?" If pregnancy is to be terminated, it is to be done as soon as it is determined that the pregnancy cannot or should not be carried to full term—with only one provision,—that is, that the pregnancy should not be terminated during an acute attack of decompensation. To terminate pregnancy in the face of an acute decompensation is to invite disaster.

"If she reaches full term, how should she be delivered?" In Group I, she may be allowed to deliver spontaneously if she is having normal labor pains, not being encouraged to bear down or to use any strain or effort, provided she is not a primiparous case. If this is her first labor, then at the end of her first stage she should be delivered under an anesthetic. A woman in Group II-A will, as a rule, without serious difficulty bear the strain of the first stage of labor fairly well but she ought not to be allowed to undergo any of the strain of the second stage. Indeed, in any of these cases the second stage of labor is the physician's responsibility. If we imagine one of the women of Group II-B or Group III going to full term or near it, she should be delivered by a Caesarean section under probably "twilight sleep" and local anesthesia, or by whatever may be the operator's choice of method.

When any of these cases have been delivered, "what may we expect?" The thing we must always guard against and prepare for is a sudden collapse immediately after delivery, or a congestion of the lungs in the second, third, or fourth day following the delivery. Both of these conditions are common complications. It is for this second reason—congestion of the lungs—that a woman with heart disease, after she has been delivered, should never be allowed to lie too long in a supine position. Her position should be changed constantly and her head and shoulders somewhat raised. This is particularly true of Groups II-B and III.

"Should she be sterilized?" Here we have an added factor in the matter of religious conviction. Frequently sterilization is absolutely refused. Sometimes it is actively demanded. However, our advice to the patient would be—surely in those cases belonging to Group III and in cases belonging to Group II-B—sterilization. In Groups I and II-A one would be guided usually by the circumstances of the case. One would probably seldom advise sterilization in Group I. One would advise, however, long distances between pregnancies and, in cases that are in a position to receive and apply

the advice given concerning rest and care, one would not advise sterilization. In Group II-A, women who have other children, who are not able to pay for servants, who find it impossible to refrain from household responsibilities—these patients should probably be sterilized.

In all the foregoing advice we have considered the case, assuming the absence of other complications, such as nephritis or pelvic deformity. These, when present, particularly nephritis, add to the necessity of advising patients against further pregnancies. Certainly in all cases except those in Group I the combination of cardiac difficulty and nephritis make sterilization almost imperative.

I wish to insist that in any of these groups, advice as to sterilization must be given always with due regard to the woman's economic ability to care for herself during her pregnancy. It is little use to talk to a woman with a house and children to look after and no money for servants and tell her that she may have another child, provided she can abstain completely from work and undergo hospitalization during a large part of her succeeding pregnancy. Such advice is useless because it cannot be followed. In such cases sterilization should be advised. On the other hand, women with a satisfactory economic status, without children and a great desire for children, might be allowed to take a greater chance.

Mackenzie,[1] in his famous dissertation, asks "what is it that I fear in these cases?" The answer is "heart failure." This is, of course, the thing we all fear. If we carry many cases through pregnancy and labor without heart failure, we feel we have done well and are too apt to forget the patient once she is out of our hands and forget that she needs good advice; also, we are apt to become careless and fail to see that she has proper follow-up care; but such an attitude will surely bring a day of sad reckoning.

In general, it may be stated that women with diseased hearts are not likely to decompensate during a well-supervised pregnancy, if they have not had attacks before pregnancy. They usually bear the first stage of labor without decompensation, if they have not decompensated before. It is the unaided second stage of labor that is most apt to result in acute attack of heart failure.

"It is to be remembered that the diseased heart may be overtaxed and recover but the degree of efficiency which preceded the attack of failure is never quite regained"—(Cecil[6]).

How shall we treat heart failure?

In the foregoing discussion, we have suggested some of the preventive and curative measures.

The following includes the measures usually adopted:

Preventive.—Control conditions likely to cause further damage (focal infections, anemia, banish alcohol and lessen amount of coffee and tea).

Protect against over-exertion, mental worry, anxiety, anger, over-indulgence in food and loss of sleep.

Advise nutritious food given more frequently and in smaller quantities, avoiding over-distention of stomach.

Carefully prescribe and regulate exercise.

Restorative and Curative.—Digitalis, amyl nitrite, nitroglycerin, morphine, sedatives, atropine in heart block, venesection in pulmonary edema, glucose intravenously, heat, oxygen.

SUMMARY

1. Heart cases complicated by pregnancy are being overlooked and ignored in a large percentage of cases.

2. Careful physical examination and careful history taking at the beginning of pregnancy are necessary if these cases are to be recognized and properly supervised through pregnancy and labor.

3. Advice as to pregnancy—in relation to marriage and child-bearing—or as to its continuance to full term, is to be based on the ability to perform exercise, the presence of other complicating factors, and the *social and economic surroundings of the patient.*

4. In any case of cardiac disease, even of mild type, every consideration should be given to the embarrassed heart by relief from work, worry, and excitement, and by the removal or improvement of other complicating conditions

5. Decompensation early in pregnancy or repeated attacks of decompensation are indications for the termination of pregnancy.

6. In all cases strict watch should be maintained for the first symptoms of cardiac failure and medical treatment instituted.

7. A careful "follow-up" in these cases will en-

able the practitioner to prevent disaster from ill-advised future pregnancies and conserve the health and prolong the life of his patients.

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PRESENT-DAY TREATMENT OF CERTAIN MALIGNANT DISEASES.*

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and
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During the past five years, there has been a very marked change in the method of treating malignant disease by radiation. This change has been effected for two reasons—first, by reason of the fact that the old methods were not curing a sufficient number of cases, and, second, that the normal tissues will tolerate a large total dosage, if given in certain fashions to be described later.

Unfortunately, the treatment of malignancy has resulted in a relatively small percentage of permanent cures, varying, of course, with the character, location, extent, and duration of the disease. This applies with equal strength to both surgery and radiation, or a combination of the two. Realizing the existence of this situation, the surgeons and the radiologists have given, and are giving much thought to it. Surgery has reached a very high level of technical excellence and leaves little to be desired when malignancy is localized to one locality or to an organ where complete removal is possible. Cancer, however, in relatively few instances can be considered as purely a local process, on account of its early tendency to travel outward through the lymphatics and the blood stream. The field of surgery in the eradication of cancer is, therefore, rather sharply circumscribed with relatively little more to be hoped for in the future, since it has reached such a high technical level.

Radiation therapy of disease is relatively in its infancy, when one remembers that the roentgen ray was discovered only forty years ago, radium thirty-seven years ago, while modern surgery has been practiced since the days of Lister. Naturally, therefore, radiotherapy has not been developed to its highest degree in this short span of years, and we are constantly learning better methods of application. Up until the past few years, radiation therapists have been confronted with the great possibility of permanent skin and tissue damage, if they delivered to a deep-seated lesion a dose sufficient to cure it. The skin, therefore, remained as an impenetrable barrier in our attack on such lesions. Fortunately, it was discovered by Regaud and others that malignant disease was more susceptible to fractional doses of radiation than to single massive doses. An important corollary to this, worked out by Coutard at the Curie Institute in Paris, is that *normal* tissues showed much less permanent injury by fractional doses than by massive doses. Thus a different chapter in cancer therapy was opened, and is by no means finished as yet.

Coutard's classical work on malignancies of the head and neck has opened an entirely new method of approach to the treatment of cancer. This worker, appalled at the hopeless condition of so many cases presenting themselves at the Curie Institute, set about to devise an additional method of treatment. He took patients who were absolutely hopeless, either from the standpoint of surgery or radium therapy, and proceeded to work out a scheme of treatment which resulted in from 25 to 32 per cent five-year cures. Instead of giving massive single doses of X-ray, Coutard gave treatments twice daily, heavily

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filtered, over a period up to forty days. There were marked normal tissue changes, which it may be well to describe. In about fourteen days, the mucosa of the mouth and pharynx in the area treated began to ulcerate, and the entire mucosa sloughed off. In about fourteen days more, this reaction subsided, and the tissues returned to normal. About this time the skin showed a marked reaction, blebs and blisters developed, and finally the deeper layers of the skin were laid bare, leaving a weeping surface. This healed in by epithelization from the edges, and in several weeks was completely covered, and never broke down subsequently. As stated above, Coutard by this method was able to salvage 25 to 32 per cent of these absolutely hopeless cases. All of us who have been using his technique have had the same experience.

Healy, of Memorial Hospital, New York City, has adapted this method to treatment of carcinoma of the cervix in conjunction with the use of radium. Many of us are following his technic and are obtaining much better results than were obtained formerly. Healy expects to control the local lesion in the cervix by the use of radium, using not simply a massive dose in the cervical canal, but radium applied to four areas over a period of a week. The four areas usually are: (1) intracanalicular, (2) direct surface application to the cervix, (3) and (4) radium on either end of a colpostat so that there is a homogeneous radiation of the entire cervical region from all angles. This method of application is very important when one considers that the effect of radiation varies inversely as the square of the distance. Thus an escharotic dose in the uterine canal will have little effect in the fornices. Giving treatment in this way, over four areas, an extremely large radium dosage can be given with few ill effects. The dosage in our clinic ranges up to 11,000 mg. hrs. Combined with this, as an integral part of the treatment, x-radiation is given through four pelvic portals, a small dosage each day up to twenty or twenty-four days to insure sufficient radiation to the parametrium. This is expected to produce a marked skin reaction, with desquamation, particularly in the perineal folds.

Tumors of the bladder and rectum are treated in very much the same manner as far as x-radiation is concerned. The local application of radium is governed entirely by the appearance of the individual case. Ferguson, of Memorial Hospital, New York, has just reported a series of bladder tumors with complete regression in over 30 per cent by the use of X-ray alone.

Localized tumors elsewhere in the body have been similarly treated, many with excellent results.

It is not within the province of this communication to dwell on the possible good effects of radiation in the treatment of various forms of malignancy. When you are confronted with malignancy, why not ask a competent radiation therapist as to what may be expected with the present methods of treatment?

The main object of this paper is to present the expected after-effects of the present method of radiation therapy. When one is dealing with malignancy, it must be clearly borne in mind that if we do not conquer the disease, the disease will kill our patient. With this in mind, we are justified in the most radical attack on such conditions, either through radiation or surgery. It has been stated that in surgery for carcinoma of the breast, one surgeon should remove the breast, another attempt to close the skin. This is another way of stating that too many times an insufficiently radical operation has been performed in order that the surgeon might get a good closure. The same holds true of radiation. In the presence of malignancy, which is definitely lethal, with a possibility of cure, we are justified in normal tissue damage, which in by far the majority of instances is not permanent. Many radiologists are deterred from the treatment which they have learned is efficacious on account of the general fear of being accused of producing an X-ray burn, even if the superficial injury heals within a few weeks. One such after-effect, not understood by the local doctor to whom the patient is returned, may be the cause of much unpleasantness due to a misunderstanding of that doctor concerning the expected after-effects of irradiation. In the past, any loss of superficial tissue has been considered ar "X-ray burn," and, with the method of treatment then in use, was justly feared. In this connection, it is believed that it would be well to refer to these results as skin changes, not X-ray burns, as the expression "X-ray burn" connotes a lesion which never permanently heals. With our present protracted treatment, with high filtration, we expect to uniformly see such effects, with ultimate, complete healing. The skin may be intentionally entirely denuded, as in treat-

ment of carcinoma of the larynx, and return to normal within a few weeks.

Remembering that we are dealing with a disease which is 100 per cent deadly unless we conquer it, we approach as closely to the border-line of permanent damage as may be necessary. Occasionally this zone is unavoidably over-stepped, although in the hands of skilled men this occurs quite infrequently. There are certain circumstances beyond our control which are unpredictable. To use a slang expression, there are certain individuals who do not seem to be able to "take it." In our pelvic cases, we will see perhaps 1 to 2 per cent of the patients who will fade out of the picture under heavy protracted irradiation. Do not forget that the disease is 100 per cent fatal, the treatment a fraction of this. Also let us not forget that in the simplest surgical procedures, there is also an appreciable mortality.

To particularize, let us consider the expected after-effects which clear up, and the complications and sequelae that occasionally ensue. First, let us consider the skin effects. Varying with the site and character of the malignancy, we expect to produce skin effects ranging from a marked erythema with desquamation to complete destruction of the superficial layers of the skin. Ordinarily these areas are healed within a few weeks, being bridged by epithelium from the edges. Occasionally infection intervenes. One of our own cases went home and a child in the house developed scarlet fever. This patient had as violent an erysipelas starting in the area of denudation as one could imagine. Diabetes retards healing very markedly, and we are always sorry to see such a patient come to us. Occasionally, due to the blocking of the superficial lymphatics by irradiation, we produce a lymphadema, which is very annoying but unavoidable. An example of this is the extensive lymphatic block in the neck sometimes seen following heavy irradiation for carcinoma of the larynx. This may eventually clear up. Permanent scarring is usually not obtained with the methods now used, but is seen occasionally, particularly about the body, where telangiectasis may result. A residual tanning and loss of hair is almost uniformly encountered over the areas treated.

In pelvic malignancies, ureteral obstruction is not infrequently encountered, about 20 to 25 per cent of cervix cases showing some degree of block. Whenever a patient who has been treated for carcinoma of the cervix complains of a dull pain in the flank, with probably some temperature, the ureters should be investigated. This block may be due to actual invasion of the ureter by tumor, compression by tumor, or blockage due to fibrous tissue formation where tumor masses have been cicatrized. Pyometrium is another complication, and is to be thought of whenever a cervix case becomes febrile and septic. This condition is produced by a sealing off of the cervical canal by scar tissue, with infection in the uterus behind it.

In treatment about the mouth particularly, there is a possibility of necrosis either in the mandible or cartilage of the larynx. This occurs infrequently, but occasionally.

In addition to these other manifestations, we expect and get marked constitutional disturbances in at least 80 per cent of our cases. These, of course, vary with the portions of the body treated. In abdominal cases, anorexia, nausea, vomiting, diarrhea with the occasional passage of bloody stools, and general weakness with anemia are encountered. To combat these, general constitutional measures are employed which consist of sunshine, good food, fruit juices, alkalis, blood transfusions, and liver extract administered intramuscularly in daily two c.c. doses. Paregoric is also used to control the diarrhea. These general disturbances last usually only a few days following the completion of radiation. Rectal and vesical irritation may persist for weeks. In treatment of thoracic areas, all of the foregoing are encountered except diarrhea, vesical and rectal disturbances. In treatment about the head and neck, oral hygiene is extremely important to combat sepsis and dryness of the mouth.

Three patients are presented, one showing the immediate effects of heavy radiation, the other two showing the residual changes.

Case 1.—G. C. C., white, male, age 63. Admitted to the University of Virginia Hospital April 13, 1933, complaining of a growth in his throat of about seven month's duration. X-ray of chest and laboratory procedures were negative. Laryngoscopy showed a growth involving the right aryepiglottic fold and about two-thirds of the epiglottis. No glands palpable. Biopsy showed carcinoma, grade III.

Six days after admission, a tracheotomy was done and this was immediately followed by electro-coagulation and dissection of the tumor with implantation of four radon seeds which yielded six millicuries of radiation.

Two days later x-radiation was started, which continued for twenty days, giving 3,000 r to each side of the neck. About ten days after the series had begun, the mouth became very dry. A few days later, the mucous membrane of the throat and mouth became reddened, and later a false membrane formed. At about the end of the series, the mouth and throat had practically cleared up, but the skin on each side of the neck had begun to redden and scale. In about three weeks, the skin had practically healed.

About four and a half months later, the patient was admitted again for an emergency tracheotomy due to edema of larynx resulting from an acute laryngitis. During this stay, no evidence of tumor was found, but a marked perichondritis was present which accounted for the narrowing of the larynx. Several check-up examinations for the past two and a half years have revealed no carcinoma.

Case 2.—R. L., colored, male, age 51. Admitted to University of Virginia Hospital April 11, 1935, complaining of pain in the right chest for three and a half months, masses in the right side of the chest, and loss of weight. Examination revealed a firm, rounded mass over the fourth, fifth, and sixth ribs, mid-clavicular line, measuring about 9 cm. in diameter and elevated about 3 cm. There was a similar mass slightly lower and in the mid-axillary line on the same side. Glands were palpable in the right axilla. X-ray of the chest showed destruction of the sixth rib corresponding to the location of the tumor masses. Biopsy of axillary gland was reported as Ewing's tumor. Wassermann was strongly positive. X-ray therapy was given over eleven days, amounting to 3,300 r, through filters of one-half Cu. 1 Al. 200 K.V. at 50 cm. distance. The skin over the treated area became very red, sore, and finally denuded. Six weeks later, X-ray of the chest showed marked regeneration of the involved rib. There were still several palpable glands in the right axilla. The skin at this time was healed but pigmented. Six weeks later, the patient returned to Tumor Clinic with no complaint but with a hard, freely movable mass about the size of a hickory nut in the left side of his neck and several small, palpable glands in each axilla. The tumor in the right chest wall had completely disappeared, and the skin of the treated area was scaly and mottled. X-ray therapy was immediately started, filtered through 2 mm. Cu. 1 Al. 200 K.V. 50 cm. distance and 1,500 r to each axilla and 3,000 r to left side of neck was given. Five weeks later, there was no evidence of tumor. The rib had completely regenerated, but there were definite skin changes due to x-radiation. These were of a lesser degree because heavier filtration (2 mm. Cu. and 2 mm. Al.) had been used than during the former treatment.

Case 3.—R. B. W., white, male, age 58. Admitted to the hospital July 15, 1935, complaining of an ulcerating mass behind and just below the left ear of two years duration. The mass had grown rapidly during the three months previous to admission, and then was about the size of a large walnut. No definite glands could be palpated. The Wassermann was strongly positive. Biopsy showed the mass to be epidermoid carcinoma grade II.

Because of the size of the lesion, it was thought that radium needles offered more towards a cure. 2,400 mg. hrs. of radium were given by inserting the needles into the mass. The latter practically disappeared but two months later the mass had begun to recur. X-ray therapy was then started, 200 K.V., and filtering through 2 mm. of Cu. 300 r were given each day for thirteen days, and then 100 r per day for a total of about 5,000 r over a total period of four weeks. During the treatment, the patient complained only of a moderately sore throat. At the end of the series, the throat was feeling better, but the skin over the treated area was very red and sore. In several areas there was a beginning denudation of the outer layers. The site of the previous insertion of radium had never completely healed and at that time there was some infection.

SUMMARY

1. With our present-day method of protracted, high voltage treatment with heavy filtration, we expect marked, immediate skin changes, even to loss of skin.

2. These effects usually heal within a few weeks, with very little scarring.

3. In pelvic cases, ureteral obstruction and pyometrium must be considered as complications.

4. Occasional bone and cartilage necrosis occurs.

5. General constitutional disturbances are encountered in at least 80 per cent of the cases, subsiding within a few days after completion of treatment.

6. Malignancy is practically uniformly fatal, and the most drastic measures are justifiable if there is a possibility of a cure.

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DISCUSSION

DR. FRED M. HODGES, Richmond: Dr. Archer has certainly done a real service, not only to the patients who have received this type of treatment, but to the medical profession as well in bringing this subject so vividly to our attention.

If the treatment did not apply to cases that are hopeless by other methods, it would certainly not be justified. However, when you realize that in almost all of the patients, the skin is healed within two to four weeks time, the treatment is not as severe as one not experienced in this field would think. The important point of the paper is that very often the patient returns to a town some distance from where he received the treatment and he may get into the hands of a doctor that has not been written about the skin changes.

About two and a half years ago I treated a case, and about a week later, after the treatment has been finished, I was called up by a doctor from another town who stated that the patient had received an X-ray burn. He had not seen a case previously treated in this way, and of course this frightened the patient very badly.

All of us feel, of course, that where a lesion can be removed surgically it should be done. However, when you figure that from 25 to 50 per cent of the cases which are entirely hopeless by other means can be saved by this means, then the treatment is justified.

We hope that in the near future we may be able, by having great distances used, and more filtration, to be able to get the amount of radiation that we are now getting without causing as much symptoms as we do at the present time. However, when you figure that a great many cases can be cured by this method, it is certainly justified, and the roentgenologists need the help of the general men in following these cases through the critical time just after the administration of the treatment. In larynx cases, for instance, the skin is denuded usually on both sides of the neck, and these patients don't suffer a great deal.

I wish to thank Dr. Archer and I think that this paper is real service to many cases which used to be considered hopeless.

DR. J. SHELTON HORSLEY, Richmond: The paper is extremely helpful in the treatment of malignant disease. We are doing now more of the roentgenological treatment than we did some time ago, both primary and post-operative.

I think that the preliminary treatment is valuable, and in such cases as Dr. Archer has shown the result here the method has to be given with considerable ingenuity.

DR. ARCHER, closing discussion: I have nothing more to add except that I wish to thank the gentlemen who discussed this paper and leave with you a final parting word. Do not consider any case of malignancy absolutely hopeless until you have consulted some radiologist as to what this new method of treatment may have in store for your patients. Do not forget that, with this present-day treatment, we expect to get a marked reaction which we expect to return to normal within a relatively short period of time. Unfortunately, sometimes we over-step just a bit, and we get permanent changes, but that damage is not more severe than the disease itself will be if uncontrolled.

THE PREVENTION OF PUERPERAL INFECTION WITH SPECIAL REFERENCE TO LABOR AND POST-PARTUM CARE.*

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Puerperal infection is one of the oldest diseases known to medicine. Since the time of Hippocrates each generation of medical men has striven to learn more about this malady, which too often claims the lives of women in the bloom of youth. Experimental and clinical studies have enlightened us a

*Read before the Norfolk County Medical Society, at Norfolk, Va., January 28, 1935.

great deal concerning the causative organisms, the pathology, and to some extent the treatment, yet there is a great deal to be learned about the mode of infection and its prevention. A continuous focusing of our attention upon this problem should ultimately yield results. The most recent report of the American College of Surgeons indicates that there are approximately 16,500 puerperal deaths from all causes, yearly, in the United States. While it is impossible to determine exactly the number of these deaths due to infection, we know that it heads the list, and represents about 2.7 per 1,000 births. Undoubtedly for each death there are at least ten women who are dangerously ill, and many more who are moderately sick as the result of puerperal infection. At times it is discouraging to review a year's work, because we are always confronted by some case of unaccounted for infection. It is difficult to estimate the average morbidity, because it varies seasonally, and likewise varies with the type of service. The late Dr. Polak once stated in the writer's presence that he considered a morbidity rate of 21 to 30 per cent as within average limits. Willetts, in a review of the work at Blodgett's Memorial Hospital, reports the morbidity rate of 31.07 for the attending staff, and 30.4 for the regular staff.

For centuries it was believed that puerperal fever was due to retention and disintegration of lochia. In 1845, Oliver Wendell Holmes presented his memorable paper on the "Contagiousness of Puerperal Fever," which not only was not accepted, but ridiculed. In 1847, Semmelweis of Vienna discovered and published to a doubting world the source of puerperal fever, and demonstrated that, following such a simple procedure as having the doctors and nurses scrub their hands in chlorine water, the mortality of hospital cases was reduced from 10 to 1 per cent. His work was not accepted until many years later when Lister (1865) recognized the similarity and classified puerperal infection as a wound infection. The work of these men was followed by striking results because they had suddenly seen the light and been directed toward the management of their cases in a much more logical and scientific manner. There will perhaps never again be such a striking improvement. Maternal mortality has not been appreciably reduced in the past fifteen or twenty years. A review of the literature by Dr. P. Brook Bland indicated that the death rate in 1915, from all puerperal causes, was 6.1 per 1,000, and in 1925, 6.5 per 1,000. Even though 66 per cent of all women are delivered in hospitals, the maternal morbidity and mortality has not been greatly reduced, apparently because of the increase in operative interference, failure of isolation, exposure to infection, and lack of supervision. My remarks shall be directed toward the prevention of puerperal infection with special reference to the lying-in period.

When a patient decides between a hospital and home delivery, she is facing a serious problem, if she but realized that the morbidity in hospital deliveries is 8 per cent for multiparae, against 2 per cent for home deliveries, and that of primiparae in each instance is four times as great. This further means that physicians and hospitals assume an added responsibility when they direct their patients to the hospital. It is often a point of discussion why a patient becomes febrile in a hospital, when such often does not occur at home, though the technic is much less elaborate. The answer is evolved from the fact that the patient is rather immune to her "home germs," and there may be no new person in the home except the physician; on the other hand, at the hospital she is confronted by a new corps of attendants, and may be housed with victims of numerous and sundry infections.

A great deal of study has been devoted to the vaginal flora, yet for practical purposes we have not accomplished a great deal. Many women from whose genital canal a great variety of apparently virulent organisms may be obtained, will go through labor and the post-partum period with no sign of infection, while another under similar circumstances will become ill. This leads us to believe that the patient's resistance to her prevalent organisms is important. This same patient may be readily contaminated by another strain of the same organism to which she is exposed, by a carrier.

The organisms causing puerperal infection are legion, yet the staphylococcus, streptococcus, gonococcus and B. coli communis are the most frequent offenders, and of all, the hemolytic streptococcus is the most virulent. There are four generally accepted modes of infection, namely:

a. Autogenetic.
b. Contact.
c. Infection by carriers.
d. Air borne—(Watson).

Autogenetic infection is always a problem; for instance, the fallopian tubes or Skene's gland may be

the source of a latent infection which becomes active after delivery, when the patient's resistance is low, and the portals of entry are open, noting especially the perineum, cervix, and placental site.

Contact infection represents the type in which organisms are carried by gloves, hands, etc., from one patient to another.

Infection by carriers represents a large group in which infectious organisms, such as the streptococcus hemolyticus, may be harbored in the nose or throat of the attendant, and is transmitted to the patient by coughing or sneezing. It is believed that in such instances the virulence is increased by the transmission. This mode of transmission was believed to be responsible for the epidemic at the Sloane Hospital in 1927. It was shown then that 20 per cent of nurses, 8 per cent of doctors, 25 per cent of students, and 4 per cent of patients were carriers of hemolytic streptococci in the nose or throat.

The air-borne infection, classified by Dr. Watson, designates the sporadic type of case which becomes infected in spite of all precaution, much as the occasional case of diphtheria, influenza, etc.

Assuming that any given case has had adequate prenatal care and is admitted to the hospital in good condition, she is faced with several definite sources from which infection may be transmitted to her. For practical purposes I shall discuss the ones which appear to be of greatest importance, that is, the admitting room or labor room, the delivery room, the post-partum surroundings, the attendants, and technic associated with each. Quoting Charles S. Bacon, "one fundamental mistake made by general hospitals that accept obstetrical cases, is the failure to separate these cases." He feels, as do many of us, that practically all except the autogenic group of infections may be attributed to faulty technic, or the mistakes of delivery and that period immediately following. DeLee for many years has contended that maternal infection can only be reduced to a minimum by the strict separation of obstetrical cases, either by a separate building or wing of a general hospital. The patient coming into the hospital should never be admitted to the room which she will occupy after her delivery. One or several rooms should be set apart and equipped as labor rooms, no other type patient being allowed to use these rooms. Each room should be equipped with sterile gloves and other essentials for making examinations. Assuming that the proper safeguards are thrown around her in this manner, one should be certain that the nurse who has her in charge is not responsible for other cases at the same time, and on no other occasion should come in contact with infections of any nature. An added precaution along this line is to culture the nose and throat of the obstetrical nurse at weekly intervals. Dr. B. P. Watson, of the Medical Center, is so convinced of this very real source of infection, which was impressed upon him and his colleagues by the serious epidemic in 1927, that he has recently called our attention to it in his paper to the A. M. A. I feel it is so important to the ones of us who work in general hospitals, that I am establishing the routine on my own service of having the nurse's nose and throat cultured at regular intervals. Dr. Watson advocates the continuous use of masks at all times.

The patient's preparation upon admission is important. She should have a complete shave of the genital and lower abdominal regions. A complete shower or sponge bath is advisable, in lieu of which a thorough scrubbing with green soap and water from the costal margin down is very good. If not too far advanced in labor, an enema may be given. The question of vaginal versus rectal examination has been debated for many years and, like other issues in medicine, there is a wide difference of opinion. I shall not discuss the relative merits other than from the standpoint of infection. I feel that a rectal examination in which the vaginal mucosa is pushed into the cervix, and considerable manipulation done, is more dangerous than a vaginal examination, which is done under strictly aseptic precautions. The tendency in making vaginal examinations is to traumatize the cervix thus opening a very definite avenue to infection. Rectal examinations, if preferred, should be done with sterile gloves, using a sterile sponge to cover the external genitalia. Vaginal examinations had best be done only in the delivery room, after the patient is thoroughly scrubbed and draped. The question of whether or not to use vaginal instillation as a part of this preparation is a debatable question. Mayes claims a very markedly reduced morbidity followed his technic of instilling 4 per cent mercurochrome. He also states that in a consecutive series of 9,216 vaginal deliveries at the Methodist Episcopal Hospital in Brooklyn, in which his technic has been strictly adhered to, there has been only one death from sepsis. Jagger, in a comparative study of 500 rectal versus 500 vaginal ex-

aminations, notes a morbidity ratio of 6 to 11 in favor of the rectal method. In regard to either method of examination it seems to be a rather accepted opinion that the patient should not be examined at less than two-hour intervals, except for some special reason.

The delivery room should be definitely apart from the labor room, and from the operating room. No visitors should be admitted to that room unless subjected to the same precautions as the regular attendants. The nurses and physicians should be equipped with caps, masks and gowns. I doubt the necessity of sterile gowns for the anesthetist and circulating nurses, as it appears that our chief source of infection is a streptococcus which is harbored in the nose and throat. The local preparation is of utmost importance. It is apparent that it makes little difference about the antiseptic used, provided that the patient is thoroughly scrubbed with tincture of green soap and water, followed by alcohol. I prefer as a final application, Scott's solution or tincture of merthiolate. There are two essential points in the delivery which I think should always be borne in mind, regardless of whether the delivery is accomplished spontaneously, or by operative means; I refer to the value of the episiotomy which leaves a clean incision which may be directed away from the rectum. The second point is the avoidance of undue trauma to the cervix, and the necessity of immediate repair of deep lacerations of the cervix and perineum. The conduct of the third stage of labor is important so far as infection is concerned; it boils down to three essentials: the maintenance of sterility, the immediate repair of lacerations, and the masterful avoidance of exploring the vaginal canal or uterus. As a final perineal toilet, I personally believe that cleansing this region by means of sponges is far safer than the usual irrigation.

A half an hour after delivery the patient is taken to her room, which should by all means be an isolated portion of the hospital, or a separate building. Not only should the maternity pavilion be a separate one, but any case exhibiting morbidity should be isolated. This applies especially to ward cases. The routine care should be a scrupulous one. The nurses should have individual duties, they should be carefully checked for the evidence of infection themselves, and should be kept off duty when there is any evidence whatever of being a carrier, or presenting any acute infection. The nurse who cares for the babies should have nothing to do with perineal care. The breasts seem to do better if not subjected to the use of strong antiseptics. My experience has been that the incidence of mastitis has been markedly reduced since a simple boric acid technic has been adopted. The perineum and sutures of all clean cases should be cared for by the same nurse. The patient should be bathed following each elimination, using first two wet cotton balls, and then should be thoroughly dried, using three dry cotton balls. Each patient should have an individual perineum tray. Any morbid case should have a separate outfit and a separate nurse. Cotton is used exclusively for cleansing purposes, and we have found 1:1000 solution germalypticus to be most satisfactory. The various dye preparations seem to have little to offer as an improvement over simple and complete cleanliness. Sutures should be carefully watched and removed at the first suggestion of infection, because prompt drainage of a local lesion undoubtedly goes a long way toward the prevention of a more serious pelvic or general infection. The patient should be watched for tonsillitis, or other respiratory infections, and such conditions met promptly with appropriate local treatment to keep the patient from being a menace to herself. The controversy between purgatives and enemata I believe applies to our present subject, and it is my personal belief that niether should be administered for at least three days, until the perineum begins to heal.

Last, but not least, I wish to call your attention to a very essential feature of good post-partum care, and that is routinely checking the red blood count and hemoglobin, and instituting reconstructive measures early in order that your patient may be fortified with a reserve of resistance to overcome the trivial infections quickly, and to offer a stronger fight against the serious ones.

In conclusion, let me reiterate that puerperal infection is still a menace to the parturient woman. The best we know today consists of isolation, strict attention to abolishing the evident sources of infection, and scrupulous adherence to surgical technique in the practice of obstetrics.

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THE PROBLEM OF PLEURAL ADHESIONS IN PULMONARY TUBERCULOSIS.*

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In recent years the use of collapse therapy in the treatment of adult pulmonary tuberculosis has increased remarkably. For example, at Catawba Sanatorium[1] when the use of pneumothorax was begun in 1912 only an occasional case was so treated.

The administration of pneumothorax took on all the aspects of a major surgical procedure. In contrast to this, 63 per cent of the patients in the sanatorium in 1934 received some form of collapse therapy. This included pneumothorax as the major group of cases, with a smaller percentage receiving operations on the phrenic nerve, on intrapleural adhesions, or some type of thoracoplasty.

The increase in the use of such procedures is highly desirable, as results all over the world have clearly demonstrated. Without doubt pneumothorax is the most efficient single method available in the treatment of pulmonary tuberculosis. Unfortunately, pneumothorax is not always available because intrapleural adhesions may seriously interfere with the collapse of the lung, or prevent collapse entirely by completely fusing the lung to the chest wall.

The operation of closed internal pneumonolysis has been designed to convert an ineffective pneumothorax into a good one by dividing the offending adhesions. The operation consists of the insertion, under local anesthesia, of the thoracoscope through an intercostal puncture. The adhesions are then visualized directly and divided by means of the high frequency current. The ideal result, if the operation is accomplished, is the immediate collapse of the lung with the well-known therapeutic effect of a successful pneumothorax.

RESULTS

The cases reported come from seven different sanatoria and represent all possible types of adhesions and variations in the condition of the patients. Many of them were far advanced and extremely poor operative risks.

Of the 129 cases reported, only seven were totally unsuitable for the division of adhesions. The inoperability was based either on the type of adhesions or on the presence of extensive pleural tuberculosis.

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Of the seven inoperable cases, two later had a thoracoplasty with excellent results. One case required an open operation to successfuly divide the adhesions.

Total Cases	129
Inoperable—Exploration only	7
Total operations attempted	122

	Present before Operation	*Closed after Operation*	*% Closed*
Cavities	89	66	74.1%

Eight additional cavities were reduced in size.

	Uncollapsed before Operation	*Collapsed after Operation*	*% Collapsed*
Infiltration but no definite cavity	33	32	96.9%
	Positive before Operation	*Negative after Operation*	*% Rendered Negative*
Sputum	79	75	94.9%

A clinically satisfactory collapse was obtained in 90.8 per cent of cases.

A much higher percentage of good results was obtained in the group which showed extensive soft infiltration but without cavity formation. This group comprised patients who received pneumothorax early. Pneumothorax was started before the tuberculous area had begun to break down. Consequently, pleural adhesions were fewer and less difficult to cut. When pneumothorax was delayed until cavities had formed, pleural adhesions were extensive and the results less satisfactory.

In one institution eight cases had a positive sputum before and after operation. Yet six of them had their cavities closed as a result of the operation. They all had disease in the contra-lateral lung.

The division of adhesions has been accepted rather slowly by the profession on account of fear of complications or dangers of the procedure. Forsee[2] reported that out of twenty-eight patients operated upon two developed tuberculous empyema with one death; six developed pyogenic empyema with two deaths; four developed spontaneous pneumothorax and all died. There were seven deaths attributable to operation in a small series of twenty-eight cases. Welles[3] reported much better results. In a series of 141 cases attempted, six cases developed tuberculous empyema and two developed pyogenic empyema. There were no deaths.

That fear of the operation is unjustified is shown by this series. The mortality from operation is zero.

The operation of closed internal pneumonolysis carries much less risk and a lower operative mortality than does thoracoplasty. When a good pneumothorax can be obtained it is always preferable to a thoracoplasty. We have frequently been agreeably surprised by the number of adhesions which could be cut, and the excellent results obtained, when a previous study of the X-rays had indicated that thoracoplasty would probably be necessary to close the cavity.

Hemorrhage has been of minor importance. Two cases lost less than 100 c.c. and required only aspiration for treatment. One patient had a severe postoperative hemorrhage and required open operation to control it.

The danger of empyema is also minimal. There were no cases of pyogenic empyema. Three cases developed tuberculous empyema at such an interval after operation (earliest five months) that it must be ascribed to the progress of the disease and not to the treatment.

There is a definite tendency as experience increases to attempt more difficult and complex adhesions. However, such cases can best be handled by dividing the procedure into two or more stages. This reduces the operating time of each stage and does not exhaust the patient. Also, the adhesions are more easily studied, the lung more readily seen in relation to the adhesions, after they have been partly divided and have stretched for several months after the first stage. Occasionally no second stage is necessary after a partial operation has been done.

Seven cases had two operations and one case had three. Two patients who were aged twelve years and one aged fourteen were operated upon.

In several patients with diabetes it was noted that after the adhesions were divided and the tuberculosis improved, the patients carbohydrate tolerance was also improved. This may have been due to improvement in digestive function, due in turn to a decrease of tuberculous toxicity.

The practicing physician is being encouraged to use pneumothorax. Many physicians are now capable of administering pneumothorax, and others are receiving training in the proper institutions. Patients are being discharged from sanatoria to continue pneumothorax at home. Other patients should be started on pneumothorax while awaiting a bed in a sanatorium. The proper care of a tuberculous patient presupposes a knowledge of tuberculosis, thoracic physiology, technique of the administration of pneumothorax, a working knowledge of the use of a

fluoroscope and the essentials of reading roentgenograms of the chest. In addition, the physician should be able to recognize the conditions under which his patient requires the severing of pleural adhesions. When a patient definitely requires pneumothorax, a good collapse is essential. Obviously, pneumothorax which fails to put the lung at rest, or fails to compress the diseased area, or fails to close the cavities, is of little or no value. In other words, the patient receives pneumothorax, but because of intrapleural adhesions preventing collapse, the tuberculous process is very little affected.

Several years ago Matson[4] reviewed 850 cases and found that of those patients having a good collapse by pneumothorax, 68 per cent were well or clinically arrested, and 21 per cent were dead. When the collapse was seriously interfered with by adhesions only 26 per cent were well or clinically arrested and 50 per cent were dead.

In this series the duration of pneumothorax prior to operation varied from two and one-half months to over two years, the average being about six months. All patients had either a suspended cavity held open by adhesions, or an extensive soft lesion which was prevented from collapse by adhesions. All had failed to respond satisfactorily to pneumothorax. Many of them had varying degrees of involvement of the contra-lateral lung, and a satisfactory collapse of the more seriously involved lung was imperative.

No cases showing intra-pleural adhesions were considered for operation unless it was the firm conviction of the physician in charge that the adhesions were seriously interfering with the patient's progress, and, further, that the degree of collapse was unlikely to be improved by continuation of the pneumothorax unless the adhesions could be divided.

In addition to the fact that the involved area in the lung could not be compressed due to the presence of the adhesions, a few other findings should be mentioned. Some cases formed fluid quite rapidly when air was administered under positive pressure in an attempt to keep the patient symptom free. The fluid was usually a menace when present in considerable amount because of the grave danger of losing the pneumothorax entirely.

Other patients developed a "pressure cough" after each refill and some even aphonia. Dyspnea was quite common. In some cases the pulling of the lung against the adhesions resulted in pain. The release of adhesions, permitting a better collapse with less pressure, usually relieved these symptoms entirely. Usually also the fluid completely stopped forming or reformed much more slowly when the high intra-pleural pressure was reduced.

It is a short sighted policy which permits the continuation of pneumothorax, month after month, with a cavity remaining open as a constant danger to the patient and those in contact with him. Or, the pneumothorax may be abandoned and the patient recommended for thoracoplasty without any attempt to divide the adhesions.

In view of the safety and effectiveness of the procedure, as shown in this series, no patient should be denied the benfit of it if his adhesions are of a suitable type for severing.

SUMMARY

1. 129 cases of closed internal pneumonolysis are reported, of which 122 underwent division of adhesions.

2. 90.8 per cent showed a clinically satisfactory collapse. 94.9 per cent of cases having a positive sputum were rendered negative.

3. There was no mortality. Three cases of hemorrhage occurred, only one of alarming degree, as the only complications.

4. The value of this procedure as an accessory to pneumothorax is emphasized.

(Since compiling these figures, twenty-six additional cases have been done, all without complications).

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DISCUSSION

DR. I. A. BIGGER, Richmond: I want first to take this opportunity to congratulate Dr. Drash on his remarkable results in this series of cases. As he pointed out, there was only one major complication in the entire series, and, so far as I know, such results have not been surpassed.

Dr. Drash emphasized the great advantages of the

closed method of division of adhesions over thoracoplasty, and I agree with him thoroughly. When properly carried out by a competent person, closed internal pneumolysis is a safe procedure. It is my impression that the greatest danger lies in the fact that one tends to become more ambitious as one becomes more proficient in such a procedure and therefore may undertake to divide adhesions which are not suitable for division by any method. So long as the cases are chosen carefully, as Dr. Drash has done, and those rejected with insufficient room between the chest wall and lung to permit the work to be done under direct vision, the procedure will carry little danger. But I think there is danger if one attempts to operate upon unsuitable cases, especially those in which the lung is attached to the chest wall by short dense adhesions. Under such circumstances, one should resort to other measures, as, for example, thoracoplasty. Closed internal pneumolysis has a much lower mortality rate and collapse can be made more complete than with thoracoplasty. It is, therefore, an extremely valuable procedure and one that should be used more frequently than has been done in the past.

I again want to congratulate Dr. Drash on his excellent results.

DR. C. W. SCOTT, Newport News: When I started doing tuberculosis work eleven years ago, the cases that Dr. Drash has shown you tonight were considered entirely hopeless, and they were left, in practically every instance, to eke out months and sometimes even years of existence with no hope of recovery. At the same time, and worse than this, they served as a source of infection for the children and others in the household. I was particularly struck, during my work as clinician in the tuberculosis service, by the hopeless attitude not only of the lay people but of the profession as well. Very frequently they would refer persons to me when they knew they had tuberculosis but just did not seem to have the heart to tell them of their condition. I think Dr. Drash has shown by his excellent results here tonight that this feeling of hopelessness at the present time, with the development of thoracic surgery, is entirely unfounded; and it seems to me we should all be more alert to make an early diagnosis of tuberculosis and should start the treatment, if possible, before this stage of the disease has developed. At the same time, I am sure there are hundreds more in the State right now that should avail themselves of the type of treatment that Dr. Drash has so well described. I think at the present time we have means at our disposal for the successful treatment of tuberculosis, and the hopeless feeling that has existed in the past is no longer excusable.

DR. DEAN B. COLE, Richmond: I wish to commend Dr. Nicholls for accepting so many patients with advanced tuberculosis and to congratulate both him and Dr. Drash for the excellent results obtained from a broad application of collapse therapy. Until comparatively recently, patients with open advanced tuberculosis were often ineligible for sanatorium care and consequently remained at home to spread the infection. The modern concept of collapse therapy is the closure of cavities and so far as possible rendering patients sputum free and freeing the sputum from tubercle bacilli, thus making it possible for these patients to remain or return home without risk to themselves, to their families or to others with whom they come in contact.

DIABETIC NEURITIS.

WILLIAM R. JORDAN, M. D.,
Richmond, Va.

Introduction. The term diabetic neuritis is used loosely, but it has gained significance through long usage. In general, it may include any neuritic manifestation occurring in a diabetic which is not obviously due to some condition other than the diabetes. There are three distinct types of neuritic manifestations apparently dependent upon diabetes. The first is featured by transitory pain without neuritic signs which is associated with hyperglycemia and is promptly relieved by diabetic treatment. The second is characterized by mild, chronic degenerative changes, such as slight pain or paresthesia of the feet associated with a decrease of tendon jerk activity and not infrequently with hypesthesia. The third, which is the subject of this talk, includes the cases with manifestations of a definite neuritis, usually cases with relatively severe symptoms and signs such as paralysis. The severity of the condition, the type of the onset, and the improvement obtained tend to differentiate it from the degenerative type. There is naturally an overlapping of these conditions, so that one person may suffer at the same time from all three. Nevertheless, it seems worthwhile to consider separately the cases with this neuritis.

We do not mean by this that these patients have an inflammation of some peripheral nerve, such as may be seen in a traumatic condition.

Incidence and Site. The neuritis, such as we describe, affects only a small per cent of all diabetics. Among one thousand such cases seen over an average period of about eighteen months we found twenty-five cases suffering from this disorder, an incidence of 2.5 per cent. In two-thirds of the cases there was involvement of the legs, and in one-fourth of the cases there was a generalized involvement or involvement of some special structure. The arms were affected alone in only 7 per cent.

Symptoms. Pain is present in 83.3 per cent of the cases of neuritis. Its most prominent characteristic is its intensification at night, and its relief when the patient walks. It is at times dull, at others sharp; sometimes continuous, and sometimes shooting and momentary. Cramp-like, burning, crushing or grinding pain occurs. Usually the pain is ill-defined. Occasionally it is limited to the course of one nerve, such as the sciatic. Paresthesia is found in 70 per cent of these cases, and is often worse at night. Numbness, tingling, pricking, burning, coldness, and a sensation as if the patient were walking on wool are described.

Signs. The most frequent sign is a decreased activity of the tendon jerks in the legs, occurring in three-fourths of the cases. This reflex change may be more marked in the leg less affected otherwise by the neuritis, although in general, when reflex change is noted, it is present in the area otherwise involved. At times reflex changes occur in members entirely free from other manifestations of neuritis. Muscular paresis varying from a slight weakness to a complete paralysis occurs in two-thirds of the cases. Various leg muscles may be affected in any one case, although in other cases only one group of muscles is involved, such as the dorsi-flexors of the foot. The quadriceps femoris follows in frequency of involvement the dorsi-flexors of the foot. The ham-string muscles are seldom paralyzed. Occasional weakness of some group of arm muscles is noted. Weakness and atrophy of both arms and both legs occur rarely. Paralysis is not easily detected in every case. A foot drop may be overlooked in a bed-ridden patient. A patient suffering falls, or having difficulty in stepping up into a street car or in climbing or descending stairs, should be examined for muscular weakness. At times the paralysis is sufficient to completely incapacitate the patient. Atrophy may be absent or marked. Sometimes it is well localized, at others wide-spread and detected only by measuring the circumference of the affected leg. Tenderness, other than the hyperesthesia, occurs in about 60 per cent of these cases. Hypesthesia occurs in 57 per cent of the patients, while hyperesthesia occurs in one-half that number. In some patients there is a combination of these two. The area affected is seldom sharply demarcated, and areas of normal sensitivity may be interspersed between abnormal areas. In general, hypesthesia involving the lower legs is more marked lower down where the circulation is obviously impaired, but often diabetics with infectious or trophic lesions of the feet and relatively good circulation have greater insensitivity than the patients with gangrene and marked circulatory deficiency. Position sense is diminished in some patients. Ataxia is very rare.

Special Features. Changes in the pupillary reactions, including Argyll Robertson pupils, are seen occasionally in patients with diabetic neuritis. Optic neuritis was noted in two patients suffering from no condition save diabetes. Both these cases recovered with no treatment other than the usual diabetic regime. Paresis of the external ocular muscles and involvement of the auditory nerve and of the facial nerve have been observed, although the influence of diabetes in these cases is not certain. Abdominal symptoms, corresponding somewhat to the gastric crises of syphilis, occur occasionally in diabetics. One sixty-five-year-old diabetic had nausea and severe abdominal pain, occurring only at night and relieved by walking. Examination revealed no abnormalities save arteriosclerosis and diabetes. One week of diabetic treatment gave her relief from her symptoms. A second diabetic suffered from neuritis of the legs and shoulders. During the course of this neuritis, she developed upper abdominal pain, nausea and vomiting, which continued for some months. No cause other than diabetes was determined. With regulation of the diabetes, the neuritis and abdominal symptoms greatly improved. A third patient was admitted to the hospital with a diagnosis of ureteral colic. Within the next few days pain descended from the region of the left ureter into the left leg and was associated with paresis and reflex changes with hyperesthesia. X-ray and neurological exami-

nation showed no evidence of genito-urinary disease, and the subsequent course of the condition showed that it was definitely a neuritis. Bladder disturbances similar to those noted in syphilis are seen at times in non-luetic diabetics. There may be loss of sphincter control and paralysis of the bladder wall with marked urinary retention. Many of the diabetics suffering with neuritis develop psychic symptoms. They become neurotic, depressed, and irresponsible. Nervousness and irritability are often extreme. These symptoms are often all out of proportion to the apparent severity of the neuritis.

Etiology. Among these diabetics are many cases with neuritis apparently precipitated by some non-diabetic factor, but we believe that even in these cases the diabetes has influenced it to some extent, possibly by rendering the patient abnormally susceptible to neuritis. Although most of the patients are elderly, about one-eighth of them are less than forty years old. Only rarely have we seen neuritis among diabetic children, and usually it was associated with some other factor, such as an abscessed tooth or pulmonary tuberculosis. The duration, severity and control of the diabetes vary considerably at the time of onset of the neuritis; but only 50 per cent of the patients had properly controlled their diabetes, and treatment of the diabetes was followed by relief of the symptoms in many cases. The neuritis in general involved diabetics suffering from arteriosclerosis. We do not feel that this demonstrates that arteriosclerosis is the cause of the neuritis. It is not improbable that the arteriosclerosis may so impair the nutrition of the nerve as to render it susceptible to neuritis, but it is also possible that the factor producing arteriosclerosis has similarly affected the nerves. Although we could demonstrate no dietary deficiency in these cases, nor did our therapeutic trial with vitamin feeding disclose a connection between dietary deficiency and the neuritis, nevertheless we believe the subject should be considered as yet unsettled.

Accessory causes of this neuritis include alcohol, foci of infection, and mechanical injury, such as pressure. A few cases have developed neuritis immediately after regulation of the diabetes with insulin. Caravati has reported a case of insulin neuritis, and it is possible that some of these cases are of that type.

Prognosis. The prognosis in cases of diabetic neuritis is much better than in those cases with degenerative neuropathy. Diabetic neuritis by itself has not caused death. Its duration depends to a large extent on the treatment given. Relief of symptoms is often prompt, although some cases remain severely uncomfortable for several months. About 50 per cent of the cases begin to improve about two weeks after the treatment is initiated. Relapse may follow after the patient leaves the hospital, but subsequent improvement occurs and gradually the process subsides. The signs of neuritis yield less promptly to treatment. Muscular paresis often disappears in a short time, but the reflex changes tend to persist. Nevertheless, we have noted improvement of sluggish tendon jerks and return of absent reflexes. The period of this improvement varies considerably. In one case seven years after the onset of the neuritis the knee jerks, previously absent, were obtained with difficulty and two years later were easily elicited. In most cases recovery occurs in a year or less. The average duration of the neuritis is about nine months.

Treatment. The treatment of diabetes is of paramount importance. A well-balanced diet, containing a large proportion of vitamin foods is given, and this is sometimes supplemented by cod-liver oil, brewer's yeast and liver extract. Physical therapy tends to give symptomatic relief to a greater extent than any other agent we have tried. Heat, usually applied by means of an electric baker or warm baths, seems to be the best agent for the relief of pain. Since the pain is of greatest severity at night, the treatments are given not only during the day, but also at bedtime. Warm but light bedclothes are desirable. One woman obtained relief only by wrapping the entire leg in a blanket each night. Massage and Buerger's exercises should be employed when indicated. The latter is more apt to give relief from paresthesia than any other remedy. Salicylates and hypnotics are used when necessary, but all drugs are used sparingly, and opiates should be omitted. Active and passive exercise of paretic muscles should be used. Pillows may be put under the legs and arms to relieve pressure on the popliteal and ulnar nerves. Crossing the legs should be avoided. Attention to the general condition of the patient and to all special conditions, such as anemia, foci and constipation, should be given. We believe

it very important that frequent contact with the patient be maintained, both to insure the proper execution of the orders given, and to reassure and encourage him often. Any patient suffering from neuritis should be protected from injury. Those with ataxia or paralysis should be protected from falls, and all of them should be cautioned to avoid injuries to the skin by the use of heat or improper care of the toe nails and corns and calluses.

Medical Arts Building.

EUGENIC STERILIZATION.

CHAS. W. PUTNEY, M. D.,
Staunton, Va.

Recent estimates indicate that there are more than 6,000,000 people in the United States who have been, are, or will eventually be admitted to a mental institution; and it is further estimated that an additional 12,000,000 are of such low mentality as not to be self-supporting. There are now 1,200,000 dependent mental degenerates in the United States and there are only 75,000 segregated. There are 400,000 patients in our insane institutions; and there are only 400,000 other medical and surgical patients in our 7,000 hospitals, according to recent reports. Many insane patients are on furlough unsterilized. There are over 240,000 confirmed epileptics, and 600,000 definitely feebleminded, and many are at large to procreate unchecked. There are 12,000

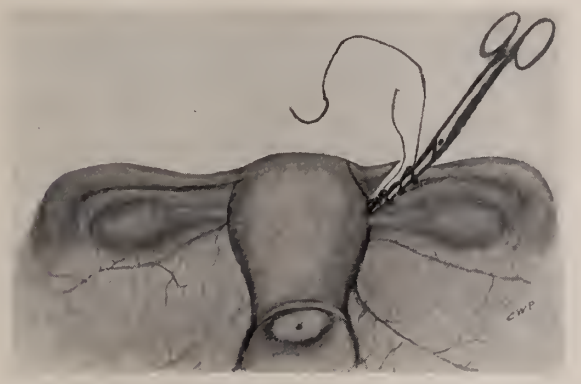

Fig. 1.—Shows clamp on the tube just lateral to the cornu. Clamp is anchored to side of uterus above the ovarian ligament. Tube has been cut, and running suture is placed over clamp.

murders committed annually in this country with the increasing number of kidnappers and other criminals; and the maintenance prison cost for criminals alone in 1928 was $29,298,640.00. Why fill prisons and asylums with these mental defectives when an operation will give many of them freedom without danger of procreation, and possibly be safe for society?

In dealing with this vast army of degenerates there are three methods of approach:

(1) *Leave them undisturbed* and unassisted and they will regenerate and degenerate according to the natural laws and only a few will long survive. This was the method followed until civilized man became more humane.

(2) *They can be assisted,* educated, and some may be helped. This method has been followed since the beginning of the Christian era; but only the more intelligent can be trained and this training should be limited to a definite craft or trade, i. e., domestic art, manual training, and the like. Attempts at other types of education should be made under the strictest religious and moral guidance; as improperly trained morons often become professional criminals. The real test of mental defectiveness is not the subject's educational attainment, but his behavior reaction to society.

(3) *Prevention* may be brought about through attention to the following factors:

a. Prevention of brain injury, postnatal and during delivery.

b. Prevention of reproduction of the hereditary type of mental defectives by segregation or sterilization.

It is with the prevention of the hereditary types of the mentally unfit that we are here most concerned. Segregation is so expensive that relatively few can be treated, but many can be sterilized and given freedom. This is a tremendous eugenic problem and, as pointed out by Landman, in his recent book on "Human Sterilization," its success depends more on science than propaganda, and more on re-

search than speculation. We feel that this is now being done.

We must not forget that:

(a) Marriage laws do not prevent reproduction.

(b) Segregation is effective, but only for a very small number, and that it is a tremendous expense to the State. If all mental defectives in the United States were now segregated our National indebtedness would immediately be doubled and the nation would be bankrupt.

(c) Sterilization by vasectomy and salpingectomy seem to be the most simple, humane, economical, and effective method that we have at our disposal. By this method the line of heritage is cut off, but with no ill effect to the person operated upon, no function is changed or disturbed, and no organ is removed. It is a protection, not a punishment; and therefore carries no stigma or humiliation. It is a practical and necessary step to prevent racial deterioration.

California began legal eugenic sterilization in 1910 and twenty-eight other states and as many foreign countries have since followed suit.

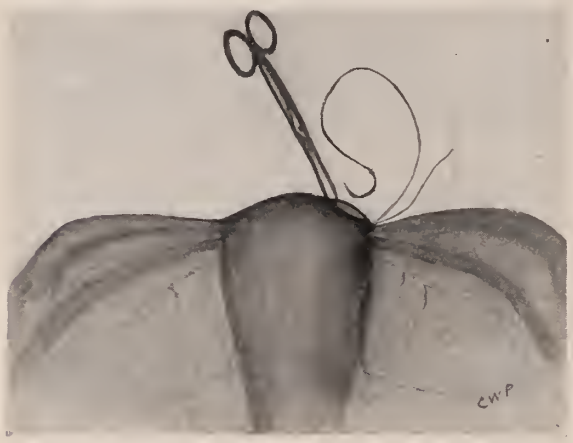

Fig. 2.—Shows the tube has been anchored to side of the uterus. Cornu has been excised and Allis clamp has been placed in upper angle to control bleeding while sutures are taken.

Virginia with her characteristic conservatism stood by for fifteen years observing the effect and results of this work in other states until in 1924 through one of her most progressive sons, Dr. J. S. DeJarnette, a law was passed providing for the sterilization of "Hereditary forms of insanity that are recurrent, idiocy, imbecility, feeblemindedness, or epilepsy." In 1927 this was the first sterilization law to stand the test of the Supreme Court of the United States (Buck V. S. Bell No. 292, October term 1926). The decision handed down by Chief Justice Holmes was another milestone to this cause. It is noted that the Virginia law does not provide for the sterilization of the criminal. Such a law for criminals when passed should be a separate law and not be confused with our present one on sterilization, and should provide for castration (not simple sterilization) of certain types of State criminals, and then paroled after they show sufficient evidence of good behavior. All convicts should be sterilized before leaving prison. According to M. A. Tarnmianz "In the thirteenth century, a traveler in Palestine reports that thieves were castrated in order that they might not produce those who would be criminals."

In the beginning of this work in Virginia the writer devised an operation "Excision of the Cornu" which was described in the June, 1930, issue of the VIRGINIA MEDICAL MONTHLY. This differs from the classical wedge-shaped incision of the cornu in that the whole thickness of the tube at the isthmus is clamped and cut and the cornu is excised. Its only objection is that there is some bleeding when the cornu is excised, but this is readily controlled by catching the upper angle with Allis forceps while sutures are taken. It has not failed to prevent conception in a single case, and it prevents intra-abdominal complication in subsequent gonorrheal infections. I have performed this operation on 303 cases by the suprapubic route and three obese cases by vaginal route without any disturbance of the ovarian function and without failure. The usual wedge-shaped resection of the cornu has failed in 6 to 7 per cent of the cases according to statistics. This is probably due to the fact that the lumen of the tube was missed. This could easily be done in an undeveloped uterus as the cornu is not rounded out and the lumen is at a relatively lower level on the fundus. This has been noticed in several cases. The lumen was missed on one side of such a case, using my technique, but the mistake was noticed when the clamps were placed on the opposite side and after completing the technique on this side the error in the first side was corrected and the full thickness of the tube at the isthmus was removed. All the other operations ordinarily used have been tried but they have not proved so satisfactory in my hands.

Patients are only selected after a formal commitment to the State. The patient with all papers goes through the regular channels before coming to opera-

tion. The details of this procedure have been given by Mickle and Holderby (VIRGINIA MEDICAL MONTHLY, September, 1930) and need not be repeated here. It can be seen that all possible pre-

Fig. 3.—Shows the assistant's two front fingers supporting the fundus up against the symphysis pubis while the operator completes the suture up and back and ties to the original end.

The same procedure is carried out on the opposite side and the abdomen is closed in the usual manner.

cautions are taken to prevent unnecessary sterilization or bad operative risks. I would not have you believe that sterilization is a cure-all; we still have diphtheria, typhoid, and tetanus with us though we have excellent preventives, often not used.

CHART I—TOTAL SEXUAL STERILIZATIONS IN THE STATE OF VIRGINIA, PRIOR TO JULY 1, 1935

	MALES	FEMALES	TOTAL
State Colony	526	360	869
Eastern State Hospital	29	91	120
Central State Hospital	153	317	470
Western State Hospital	279	306	585
Southwestern State Hospital	91	68	159
	1078	1142	2203

There is an average increase of 400 mental cases admitted to our State hospitals in Virginia every year and in 1932 the increase approached one thousand. There are according to conservative estimate approximately 18,000 feebleminded and epileptics alone in Virginia, since it has been shown that there is one definitely feebleminded person to every two hundred; and one confirmed epileptic to every five hundred persons in the United States. The yearly admission rate for Virginia's five State hospitals is over two thousand. Deaths, discharges, and paroles make room for fifteen hundred of these. If the past ten years repeats itself, this State must provide for larger hospitals and greater facilities. The Western State Hospital has another building now under construction, while the other hospitals are filled beyond capacity. New York State has over 56,000 in its state hospitals and the number is increasing at a rate of 250 per month. The expense of these patients to New York State was over $20,000,000.00 for maintenance alone in 1932. In Virginia for the fiscal year ending June 30, 1930, there was expended on dependents, delinquents, and defectives by the State $5,765,478.61; by cities and counties in the State, $1,553,487.14; by private agencies in the State $4,008,025.83, or a total of $11,326,991.58, according to figures compiled by the Department of Public Welfare.

Virginia is the second state in sterilization safeguard. The State hospitals and the Colony have eugenically sterilized 2203 defectives prior to July 1, 1935, more than one-tenth of the 20,063 sterilized in the United States prior to January 1, 1935.

What does this mean? Assuming that each sterilized person would have thirty descendants in five generations it means that we have cut out potentially 60,000 mental defectives. Assuming that each of these defectives would have had thirty descendants and twenty years of life it would equal 1,200,000 supported in Virginia one year during five generations and estimating the cost of support at $150.00 per year it means a saving to the State of $180,000,000.00.

It means not only a saving of money but of misery, suffering, crime and accidents, and at the same time assurance to our State of a population with a better grade of intellect. We are sincerely proud of what has been accomplished but we have only just begun.

No person unable to support himself on account of his inherited mental condition has a right to be born. Dr. Charles S. Little, of Letchworth village, New York says: "While I am not advocating wholesale sterilization, I firmly believe that the State is wasting one-third of the money spent on institutions for mental defectives by training and then sending out into the world children with defective family histories to raise more of their kind as they invariably do."

The problem-child, though he may be thought to overcome his difficulties, is certainly prone to lend new problems if allowed to reproduce. Few men of intelligence would select a problem-child, even though trained to adjust herself, to be the mother of his children. In 1930 the members of the American Association for the study of the feebleminded were asked whether they approved of "selectively" sterilizing the whole class of hereditary mental defectives. Out of 243 replies, 227 approved the principle. The fight for sterilization carried on by those

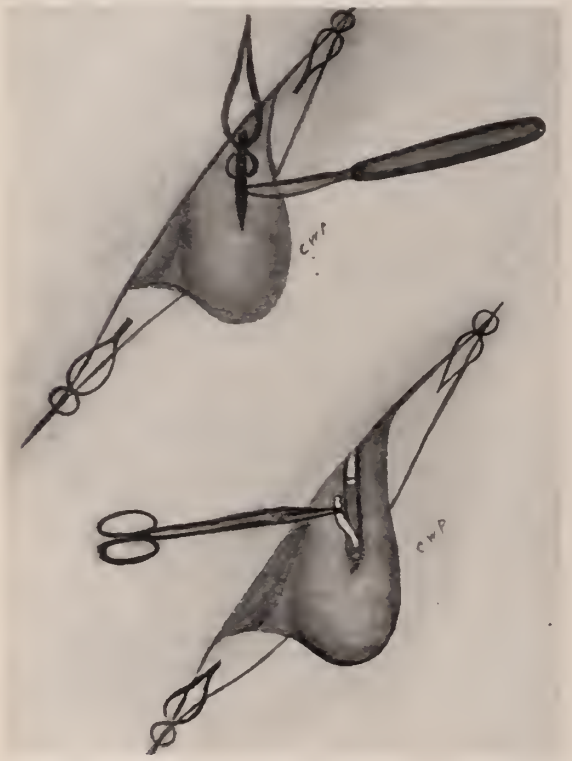

Fig. 4.—RESECTION OF THE VAS: Step 1, above, shows the stabilization of the vas with a towel-clip after it has been localized on the side of the scrotum by rolling it superficially between the thumb and index finger. Incision is then made longitudinally.
Step 2, below, shows resection of the vas and ligature of cut ends, after it has been stripped of its coverings.

who know the tragic meaning of bad breeding, has made impressive advances toward victory in recent years, and we find sterilization laws have been enacted in Scandinavia, many Swiss Cantons, provinces of Canada, and Mexico, and in twenty-eight of the United States.

On July 25, 1933, the Nazi government announced a National Sterilization Law for Germany, effective January 1, 1934. This sterilization "decree" is the first of its kind ever promulgated by a National government. Control powers for its execution are vested in an "Hereditary Health Board." The first year Germany sterilized 56,224

CHART II—EUGENIC STERILIZATIONS PERFORMED IN STATE INSTITUTIONS UNDER STATE LAWS UP TO JANUARY 1, 1935*

STATE	MALES	FEMALES	TOTAL
Alabama	124	86	210
Arizona	10	10	20
California	5,147	4,784	9,931
Connecticut	19	372	391
Delaware	218	184	402
Idaho	4	10	14
Indiana	218	135	353
Iowa	57	38	95
Kansas	839	523	1,362
Maine	7	78	85
Michigan	307	932	1,239
Minnesota	113	858	971
Mississippi	27	136	163
Montana	33	52	85
Nebraska	112	164	276
New Hampshire	29	170	199
New York	1	41	42
North Carolina	29	85	114
North Dakota	60	90	150
Oklahoma	1	7	8
Oregon	309	648	957
South Dakota	74	141	215
Utah	44	41	85
Vermont	32	65	97
Virginia	755	1,159	1,914
Washington	6	24	30
West Virginia	0	10	10
Wisconsin	69	576	645
Total	8,644	11,419	20,063

mental defectives. Hitler seems to agree with Dean Inge who says that "The state has as good a right to remove undesirable citizens as a gardner has to weed his garden."

Feeblemindedness, degeneracy, criminality, and diseases get so thoroughly intermingled and become such a part of the constituents of a nation that retrogression ensues. The nation itself becomes degenerated and finally crumbles and falls. This is the history of the human race. If we as a nation

Fig. 5.—Photograph showing the vas after it has been stripped of its coverings and is ready to be ligated and cut.

would use our scientific knowledge of heredity and plan for selective breeding of the strong and intelligent, there is no reason why this nation should not

*Compiled by Human Betterment Foundation, Pasadena, Calif.

exist forever and continue to grow stronger, but if we continue to permit insane, epileptics, feeble-minded, kidnappers, murderers, thieves, and the like to procreate and reign, we will probably pass into collapse and decay.

Why not apply the principles of preventive medicine to eugenics and develop a superior race, rather than neglect the principles that we know and go down in decay?

A survey of the effect of sterilization in Virginia, confirms the report of this work in California, and elsewhere, namely:

1. It is approved by the patients who have been sterilized, as well as by their families and friends.

2. It permits many patients to return to their homes, who would otherwise be confined in institutions for years. It thus keeps homes together and prevents the breaking-up of families.

3. It tends to relieve the burden of expense to the taxpayers, and enables the state to care for many more patients than would otherwise be possible.

4. It prevents children from being born to be brought up by mentally diseased or mentally deficient parents or by the state.

5. It is followed by a marked decrease in sex offenses, according to reports from California, and other states among the first to begin eugenic sterilization.

With such results obtained, we should have laws making it compulsory that every hereditary mental defective in our State institutions, including the criminals, be sterilized before being paroled or discharged, and such inmates of Federal institutions should not be exempt.

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A RETROSPECT AND A PROSPECT.*

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An ancient philospher has said: "It is satisfaction to a man to do the proper works of a man. Now it is a proper work of a man to be benevolent to his own kind; to despise the movements of the senses; to form a just judgment of plausible appearances; and to take a survey of the nature of the universe and of the things which happen in it."

Let me hasten at once to add, in the words of King David, "Such knowledge is too wonderful for me; it is high, I cannot attain unto it."

But since it is customary each year at this time for the outgoing President to address the Society on a subject of his choosing; and since, especially during the past year, my thoughts have often been turned upon the present and the possible future state of the physician, I deem it proper to bring to your attention some matters which I think are well worthy of your consideration.

I shall attempt no "survey of the nature of the universe" but shall attempt to state briefly some propositions which I believe to be facts; to draw therefrom a few deductions; and to make of them certain applications which I hope may prove to be practical and beneficial.

It is self-evident and trite to say we are living in a changing world. The only changeless fact in Nature is change. In ten short years we have witnessed changes of a most profound character, and the end is not yet. Many of us of a certain age have an affectionate regard and at times a wistful longing for the good old days, but we may as well face the fact that they have indeed gone, gone forever. No phase of life has been immune to these innovations, be it economic, social, intellectual, religious, professional, or what-not.

In the medical world such expressions as "State medicine" and "socialized medicine" have lost the awe-inspiring novelty of hypothetical catch-phrases; and, retaining all of their fearsome connotations, are rapidly reaching the status of uncompromising fact.

To trace the origin of the concept of a State-operated medical practice would be tedious and beside the point. Suffice it to say that beginning with contract practices in large industrial enterprises, and the part played by insurance companies in the operation of the Workmen's Compensation laws, together with the increasing ramifications of Public Health activities, the advent of numerous Foundations and Funds, the establishment of free and pay Groups and Clinics, and more recently of Group Hospital Payment plans, socialized medicine and eventual completely State-controlled medical practice have already come out of the region of fancy into the realm of fact.

So certain am I of the truth of these observations that my opinion has crystallized in the very definite conviction that we are confronted by a situation which demands our immediate thought and action. I find myself in complete sympathy with the viewpoint of the famous General who is alleged to have shouted "Come on, boys; here comes the enemy! Let's fight 'em; and if we can't whip 'em, we'll jine 'em!" And, since fighting against the factors

*Presidential Address delivered at a meeting of Southwestern Virginia Medical Society at Roanoke, September 26, 1935.

which are producing such profound and rapid changes in all phases of our lives today seems to me to be utterly futile, I am sure that the only possible alternative is to join ourselves to them. By so doing, and by exerting a steady, united, constant and intelligent influence upon them, it may be possible for us to take things as they are and make them more nearly what we would have them to be.

I do not profess to know the steps whereby this may be accomplished. When our leaders in politics, industry, finance, law and religion are uncertain of the direction we are following and the speed we are maintaining, one may expose his own ignorance without shame. But this I do know; that it is as true of us now as it was of our Revolutionary forefathers, that if we do not hang together, we shall assuredly hang separately.

Herein lies the opportunity and the necessity of our association. Embracing the entire southwestern area of the State, and being one of the largest component parts of the Medical Society of Virginia, our Society should be an alert, energetic and intelligent watch-dog over the welfare of the physicians and of the sick in the territory which we serve. It should be the champion of both in the councils of the State organization and should serve as a mouthpiece for us in all matters of public relations.

So many and so varied are the problems now confronting us that I would urge a return to our former two-day meetings in order that these matters may receive due consideration without shortening the time devoted to purely scientific discussion or lowering in any degree our professional standards. Indeed, so rapidly do new developments, both economic and scientific, occur, that I suggest for your thought the idea that we may in time find it necessary to hold quarterly sessions in place of our present semi-annual meetings.

I believe it to be not only permissible but mandatory that we discuss in our Society every proposed change, local or Statewide, in our present laws that may affect the care and treatment of the sick or the status of physicians. Nor do I think our interest in such matters should stop with simple academic discussion. My belief is that we should reach among ourselves a definite conclusion with regard to every piece of regulatory legislation proposed or pending; and that, after our collective opinion has thus been determined, we should strive in every proper way to have a deciding voice in the enactment of such laws and an adequate representation in their administration. Our peculiar position and qualifications impose this responsibility upon us.

Let us not delude ourselves with the vain hope that we alone shall escape change when all around us change follows change at a truly appalling rate. Our condition, too, will change, and we shall have no one but ourselves to blame if we refuse to take an active interest in what concerns us so profoundly, and sit passively aloof while others decide our fate for us. Let us not make the mistake of believing that greedy exploiters will hesitate to traffic in human misery, when the rewards for harvesting this virgin field will be so tremendous and may be reaped amid hypocritical sighs and tears for suffering humanity.

This is my idea of the direction in which our Society must develop if we sincerely wish to perform a necessary and continuing service. I have spent no time in considering the purely professional aspect of our association. That has always been of the very highest order, and I am confident that it will never be otherwise. Only as so-called Medical Science itself becomes more nearly perfect shall we attain more nearly to perfection in this respect.

I need not labor the point that to grow in power and prestige our Society must grow in the quality and the quantity of its membership. A Medical Society without a strong and active membership is an object fit for laughter or tears, depending upon the point of view and the digestion of the observer.

My ideal for our Society is that it may some day carry upon its rolls the name of every qualified regular practitioner within the bounds of its territory. Their need is mutual and therefore inter-dependent, and I would hesitate to say which is the greater. The society must have membership in order that it may be representative. It cannot stand for anything, if it has nobody to stand for.

Enlightened self-interest should impel every thoughtful physician to join his local Society. It is the gate-way to membership in his State and National organizations. Within its confines he will find friendship without jealousy and fellowship without ambition. At its meetings he will enjoy the stimulus of seeing and hearing new things attractively presented, and the broadening of his mental horizon will send him home a more skilful practitioner of his art. By participating in its deliberations he identifies himself more closely with it and contributes his share to the common weal. When,

through its organized influence, the Society succeeds in removing obnoxious conditions or creating favorable ones, he enjoys this advantage without feeling that he has been a chiseler who has let someone else pull his chestnuts out of the fire for him.

This phase of membership in medical societies must appeal with increasing force to the individual physician. Only through such organizations may he become effectively articulate. And he must express his views and insist upon their adoption, if he is to retain the dignified position he has inherited from generations of worthy professional ancestors; if he is to keep faith with the sick and afflicted who have been his especial charge throughout the ages; and if he hopes to merit the respect and esteem of those to whose care he must in time surrender his trust.

These are my thoughts as we come to the end of another year in the history of the Southwestern Virginia Medical Society. I see an increasing need for and appreciation of this organization on the part of the physician, the sick, and the public in general. I foresee in it an ever-increasing and expanding force, gathering unto itself every worthy physician within its boundaries, and supplying its full share of that altruistic leadership which this weary old world so sadly lacks at present, and for which it is longing with such pathetic eagerness.

We are the fortunate heirs of an honored past and the possessors of a present filled with momentous opportunities and unusual responsibilities. I have no fear but that the verdict of the future upon us will be, that we have kept the faith.

MAN CULTURE.*

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Burbank and Mendel.—In Luther Burbank's book, "The Harvest of the Years," he tells the story of how he let his imagination play upon the flowers, fruits and vegetables with which he worked. How he saw in the weed the possibilities of a beautiful flower and in a sour and acrid seed pod a luscious addition to the fruits of earth; how he saw in the valuable vegetable, the potato, the possibilities of a more uniform, hardier, healthier and more adaptable vegetable, and in the spiny cactus a useful food for stock in a desert land, and, seeing these possibilities, used his knowledge, skill and experience, without stint to make his dreams come true.

Abbot Mendel's law of heredity, known since 1865, enabled Burbank to work with scientific certainty of results, and amass a considerable fortune and undying fame.

The principles upon which Burbank relied for his results in the realm of plant life have been demonstrated time and again to be true in the animal kingdom, in the raising of high-grade stock for the use of man. The most casual observation of the haphazard and utterly unscientific methods of propagation adopted universally by the human family definitely confirms the fact that neglect of the laws of heredity brings an entirely different result.

Poor Stock.—The over plus of misfits everywhere used by society as its most prolific breeders, continues to negative the boasted intelligence of the *genus homo.* Viewing the wonderful achievements of Burbank, Mendel, Pasteur and numberless other plodding scientists, achievements that are the result of constructive imagination, study and hard work—the ingredients, as you all know, of that illusive thing we call genius,—it takes only a modicum of imagination to realize the possibilities of the future for the world when the principles of reproduction so clearly demonstrated in the lower orders shall, with conscious deliberation, be applied to bringing into being a finer physical type of man and more uniformly intelligent rank and file of citizenry.

"Hit or miss" methods in the laboratory, in medicine, in the garden, on the farm, in business, in industry, and in economics, are completely discredited, and are being banished for good and all; they must, it would seem, be discarded, too, from the domain of social science and ethics, and the perfectly well established and laboratory tested techniques of plant

*Applied for place on program of Medical Society of Virginia but was too late to secure place.

and animal culture be applied to the grading upward of the men and women of tomorrow. The physician should be the key man in this development.

The Present Situation.—Let us take a look at the present situation of society and see if it does not need a diagnostician and a specialist. Hospitals for the insane are overflowing and many mild curable cases of insanity are waiting admission and nowhere to go; feeble-minded and epileptic colonies are crowded beyond capacity, syphilis spreading unchecked with no serious effort at control; the criminal population is growing by leaps and bounds and only the feeblest efforts are being made to stay the tide, and these efforts, in the main, are unscientific in the extreme and impotent.

How small is the contribution of organized medicine in any of its branches to this supremely important forward movement? How little is being done by Government? And, sad to relate, how obstructive is the part played by the religious forces of the world toward improving the basic quality of the bodies and minds of men?

Idiots are born, not made; much of insanity is in the same class, and many criminals undoubtedly belong in the same category. Large numbers of defects, physical as well as mental, by the laxness and lack of forethought of a short-sighted generation, are not only permitted but apparently even encouraged at times to injure the high quality of a clean heredity.

Results and Possibilities.—This neglect, this heedlessness, this infatuation, if continued, must result in leaving to the children of the future a heritage of weakness, insufficiency and positive viciousness, which must react terribly upon the progress of civilization, to the eternal discredit of the scientific and social leadership of the time.

The beauty of approved methods of effective improvement of the physical and mental quality of the general population is, that the application of these methods will injure no one, either in his person, his privileges or in any physical benefit or natural right that is his, but on the contrary will tend toward a healthier, stronger, handsomer, happier and less burdened race of men, more amenable and receptive in every way to "the true, the beautiful and the good,"—in other words, to the spiritual influences upon which the world must depend for high type citizenship and the ultimate reign on earth of peace and good will.

Fortunately for the success of well-considered plans for racial improvement, the methods that are possible in plant culture and in stock raising do not have to be followed completely and logically. The short cuts in gardening, where the imperfect plants and culls are destroyed, and the restraints and violence used in stock breeding by separation, confinement and butchering, are not practicable nor desirable in dealing with human beings. There is, however, a general consensus of opinion among scientists that negative eugenics is practical and is humane; moreover, is necessary to the perpetuation of organized society. Who but the doctor, may I ask, is better fitted to guide and direct the movement?

Active measures to check the growing stream of mental and physical defectiveness at its source in heredity should, logically, be sponsored by the organized medical profession. The muddy flood of degeneracy and impotence is complicating and retarding recovery and progress in a world where high intelligence, knowledge, strength of body, of mind and of purpose is needed more than ever.

If certain people are suffering from degenerating hereditary diseases; if there are men so deficient mentally as to be incapable of doing productive work; if there are found women incapable of guiding their own affairs and exercising the ordinary restraints of civilized living; if there are men and women who, through several generations, have demonstrated their incapacity to adjust themselves to the rules of orderly society so that, for its "peace and dignity," society must remove them from its midst and shut them up and support them at public expense in prison or elsewhere,—then it appears reasonable that such folk should not be permitted at any time to reproduce their own kind.

Scientific Leadership.—A stream does not rise above its source. Social scientists, research workers, skilled medical men and others who have studied the whole subject say that all idiots, feeble-minded people and those afflicted with incurable insanity of however mild a nature, ought to be subjected to the simple surgical procedure that will destroy their reproductive ability. There is apparently less unanimity of opinion in regard to applying this procedure to the criminal types who for generations have preyed upon the persons and property of others and appear incapable of adjustment or reform. Personally I should feel no compunctions for the possible mistakes that might be made in regard to any

of these individuals. The urgency for the protection of society would in my opinion justify even greater restrictions.

Intelligence and the reasoning faculty are God-given attributes, and every inch of progress made by the human family from the beginning until now is due to the exercise of these qualities. Every appeal to the mind of man that leaves reason linked with a background of knowledge out of consideration, insults the Almighty whom, if we believe in Him at all, we must believe is supremely intelligent.

Knowledge available to the most primitive intellect makes it aware that people with weak minds, diseased bodies or with vicious, violent, predatory tendencies are not good stock to breed from. Since, therefore, in large numbers, they cannot and do not function properly in the world, so much so that they must be confined and restrained for their own good and the good of the public while they are here on earth, surely measures permitting considerable freedom of action to many of these folk and yet preventing them from multiplying their number is the height of wisdom, economy, humanity and righteousness, and not to do it is not only suicidal to society in the long run, but a blow to intelligence, human and divine.

Sentiment vs. *Sense.*—Human beings conscious of their own defects and short-comings are sentimentally tolerant of the imperfections in other people, and a fine trait of character it is, but, like many another good thing if carried to extremes, reacts harmfully on all concerned. Sentimentality of such mawkish type has by many been exalted into religious fervor. To prevent a person from being born has been considered by some good people as being only one degree better than destroying life; indeed, quite recently, if reports are correct, a high religious authority recently denounced it as "murder."

It is apparent that no appeal to reason, to considerations of public safety, economy, and to the orderly progress upward and onward of the human family will influence the views of extremists who assert, in effect, that not to procreate to the limit within the family involves a sin against God.

Religious Values.—While this occasion and this company appears hardly the time or place for a theological discussion, current theological dogma has so cluttered up the whole question of eugenics that some mention of this aspect is necessary.

I think all will agree that the outcome of the true religious spirit abroad among men is meant to be peace, good order and the comfort of helpful human intercourse and good fellowship.

When measures shown by long experience to be effective for the upbuilding of high physical and mental qualities among living things in the lower orders can without violence to any ethical principle be applied to human beings and thereby bring about more rapidly a social order toward which religion tends, namely, a society in which disease, poverty, civic disorder, and all degenerating influences, will be reduced to a minimum, then it would seem that such measures are truly religious and should be supported by all who pray with fervor that the "will of God be done on earth as in Heaven." We have been taught since childhood that in Heaven no ugly degenerating thing abides. It would seem that the prevention of such things on earth is a truly religious function.

In my judgment the physician who sterilizes the mental incompetent or assists otherwise in the limitations of the offspring of degenerate or syphilitic people, is doing a more religious act than he who preaches to or feeds or clothes those who are utterly incompetent.

Such people in a more rational society, dominated by true wisdom and righteous common sense, would never have been permitted to enter a world into which they could never by any possibility happily fit or function.

Social Demands.—While degenerates and hereditarily useless and worse than useless people are here, a common humanity demands that they be taken care of by those who run the world, but to encourage or at least do nothing to discourage their arrival upon the scene—from the point of view of scientific medicine and sociology—is inexcusable folly. This folly is emphasized by the fact that well-informed people refuse to be scared into bringing more children into the world than they can care for. Scientific principles which are manifestly founded on truth demand a certain consistency which many of our old religious ideas do not hold, particularly that idea promulgated when the earth was young and empty, that man should "multiply and replenish the earth."

The hazards of life since the beginning of recorded history have been great, and wars and pestilence and famine regularly absorbed the surplus population. This "safety valve" (God save the mark) may not now, in the light of a growing appreciation of social responsibility, be counted upon, yet the idea of unhindered maternal functioning, as a religious idea alone, is supposed to be adhered to. We should be thankful, however, for the inconsistency that has discarded the companion idea polygamy, adopted by the old patriarchs and kings, like Abraham, Jacob, David and Solomon. People with high intelligence are apparently going to the other extreme. Leadership by those best fitted to lead would seem to be imperative.

Conclusion.—Though the world seems to be shocked that the pressure of population in Japan and in Italy should have apparently forced upon those nations unjust and bloody wars of conquest, we are piously admonished by religious authority that to limit offspring in a family is a heinous sin, and then told that poor "Onan" is now in the deepest hell because he refused to add to his family responsibilities.

"A condition not a theory confronts the world," and only men of quality can meet that condition successfully.

The physician is a man of quality; in addition, he is a man of knowledge. Surely in this crisis he should not withhold that knowledge and the force of his organized opinion in the battle on many fronts for a more uniformly better type man in a better world.

THE MEDICAL MAN—HIS ECONOMIC RELATION WITH THE STATE AND SOCIETY.*

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I should be the most ungrateful man in all of the world, if I failed to express my deep and lasting appreciation of the honor that you have done me. You have, indeed, conferred upon me the highest honor of which you are capable, viz., the presidency of your society. And, so, even at the risk of being tautological by repeating what I have said before, I would assure you that I am more than deeply grateful. I thank you with all my heart. I promise to give you the best that is within me. I would, indeed, compare myself with Moses. You all remember the Biblical story,—how, when the Israelites were in battle with their enemies and Joshua was their leader, as long as Moses held his hands to heaven, Israel won. Then, when the hands fell from sheer exhaustion, the tide of battle turned. But other leaders saw the trouble and quickly raised the hands of Moses for as long a time as was necessary, and Israel was victorious. So may I ask you to uphold my hands? To bear with me? To help me in any way that you can? For, after all, this is your society. I am only your executive. It is my province to execute your wishes. To this end I once more promise you the best that is within me.

It is a long time since my father entered me as an academic student at the University of Virginia. It was there that I became acquainted with the honor system and learned its full meaning and interpretation. It was there also I learned that all education is based upon a rigid adherence to the truth. However much a student might neglect his studies or dissipate, it was duly impressed upon him that his word was his bond. A certain something, a *contagium vivum*—a ferment, if you will—pervaded the very atmosphere. So much so was this the case that I must bear witness to the fact I have seen the greenest and roughest material leave college as a finished product. Like Tennyson, he bore the grand old name of gentleman. He could not escape it, if he would, and having left his *alma mater* he enriched society and the world.

In due season I graduated in my academic and professional studies, passed an examination before the State Board of Medical Examiners, was duly trained in hospitals and elsewhere and entered upon my life-work. I refer, of course, to the practice of

*Inaugural Address as president of the Norfolk County Medical Society, October 7, 1935.

medicine. But what a change has come upon us during the last few years, and more especially with the ending of the World War and the signing of the Treaty of Versailles! That adherence to the truth, in which we were all so carefully trained, seems no longer to exist. In the mad race for commercial supremacy we have witnessed the most alluring misstatements. We have seen the collapse of vast financial institutions, whose executives we had thought beyond reproach. The most exemplary citizen, so to speak, has almost overnight become the greatest rogue. Credit has become too liberal. To quote Shakespeare, "The wicked prize itself buys out the law." And, as a result, we now witness the pauperization of old men and those dependent upon them, of widows and orphans. Savings, legacies and means of support have vanished. We are also witnessing a too great familiarity of the sexes. One wonders if this is well. Is the gentleman or lady disappearing? Is honesty or modesty at a premium?

Nor is this all. Economic laws have been thrown to the winds. We no longer adhere to the principles of national wealth as laid down by Adam Smith nor to the teachings of Ricardo or John Stuart Mill. The ownership of the land is no longer a distinguishing mark of good citizenship. Real estate no longer exists as an asset; in most cases it has become a liability. We have forgotten that the production of all wealth emanates from the use of land, labor and capital. Just now, as in all depressions, three remedies are seriously considered. We decrease the gold value of the dollar (witness how the Federal government has robbed its citizens of more than two billion dollars); we advocate the purchase and coinage of silver; we increase the output of the printing press, forgetting all the while the many experiments and bitter experience that accompanied the Continental, greenback, and Confederate monies. We also forget the scriptural adage that in the sweat of our brows shall we eat bread. We are trying to manufacture something out of nothing. Perhaps after all Adam Smith, Ricardo, John Staurt Mill and Malthus are old fogies and out of date. But I venture the prediction that when the laws of economics do assert themselves, they will do so in no uncertain manner. There is a limit to governmental credit. It cannot last indefinitely.

Like the governments of many of the European nations, we are rapidly becoming socialistic. That government of the people, for the people and by the people, of which Lincoln dreamed, has vanished from the face of the earth. The State no longer exists for the individual; on the contrary, the individual exists for the State. We find this in modern education; only a very few of the highest institutions of learning allow a choice of the subjects to be studied. We find socialism in commercial enterprises. The State has determined to regulate all banking facilities. It has also determined to abolish, if it can, all privately owned public service corporations, such as power plants, gas works and railroads. It has gone into partnership with incorporated companies of all sorts, crowding out the stockholders and taking preferred stock for itself. It has forced the payment of interest at a rate of 5 per cent upon loans, which it makes, and borrows money at less than 3 per cent. It has gone into competition with building associations and savings banks by loaning money upon mortgage security. It has sought to take the place of charitable organizations. This it has done under the guise of organized relief. It has given money to municipalities. Old age pensions are now about to be inaugurated. And so it has created a number of positions with an ever-increasing tax assessment. We went to war with Great Britain over a tax on tea; we raised the cry of "no taxation without representation." But we have created for ourselves the very thing of which we accused King George III. In the language of the Declaration of American Independence, we now have a "swarm of officers to harass our people and to eat out their substance."

This socialistic teaching is in itself rich in theory and almost ideal in its conception. Like little children, all that we shall have to do is to follow a leader. We shall be fed, housed and clothed. It is not communism. It does not attach itself to the doctrines as advocated by Hitler or Mussolini. It has been proposed as a remedy against depression. The output of agriculture or of manufacture is to be controlled by the State. But can any one determine just what the required amount of any commodity should be? Of course, no intelligent person will advocate the doctrine of *laissez faire*. He will realize that in any organized society individuals must suffer. He will strive for the greatest good to the greatest number. But he will also resent the ever-increasing encroachment upon the liberty and personality of the individual. He will condemn the taxation of wealth only for the sake of taxing the

wealthy. He will resent the idea that all things should be held in common. And he will endeavor to prevent a conflict or war between the classes and the masses, a war which, if it should start, seems likely to make our own struggle between the States seem only as a child's play.

As in almost everything else, the State has also taken a hand in the practice of medicine. That medicine is rapidly becoming socialistic no one can deny. It is again a question of the State *vs.* the rights of the individual. Thus the State has taken over the care and treatment of the insane and feeble-minded. It has long since assumed the directorship in the management of epidemics. It now cares for the tuberculous. Under the guise of public health, it looks out for quarantine, water supplies and garbage and sewerage disposal. Under the guise of preventive medicine it vaccinates the people, renders first aid and seeks to control venereal diseases. It appoints medical inspectors for school children. Only recently the Federal government has made appropriations for the study and direction of maternal and child welfare. Of course, most of this is the duty of the State; none of us would have it otherwise. But it makes an ever-narrowing differentiation between the work of the public and the private physician. It brings up the question of the division of the time of the services of the medical man. When is he acting for the State and when in a private capacity? It argues for a full-time arrangement. It places the medical man in the employed class rather than as a free agent. And, lastly, it has deprived the doctor of many a fee.

This brings up an interesting question. If the public physician or the school physician is capable of diagnosing disease, should he not also be capable of treating it? "My little boy," says Mr. Taxpayer, "was seen by the school doctor and told that his tonsils must be removed. I, personally, am perfectly satisfied with my son's health; my family physician agrees with me. I see no reason why the tonsils should be removed. But if the State tells me that they should be removed, and must be removed if the boy is to continue in school, it is the duty of the State to have them removed." In other words, this brings to our attention the ever-increasing demand on the part of certain of the public for free or cheapened medical attention, or, if you will, State medicine. We may fight against it; we may organize against it, as we will; but if the public wishes free medical services, it will obtain them, even as the prohibition provision of the Constitution was repealed. The public, however, will get exactly what it pays for—mediocre service, delayed service, or no service at all. As in education, we shall be divided into two camps, the medical services rendered by the State and those rendered by the individual physician. The rank and file of the profession, even as of the school teachers, will be forced either to become employees of the State or to seek other occupations. The practice of medicine and of its allied arts, such as dentistry, will of necessity, deteriorate. Let us not be unmindful of the writing on the wall.

It is needless to add that the American Medical Association is doing (and may be trusted to do) all in its power to prevent such chaos in the practice of medicine. It hopes to do this partly by a process of education. "Your committee notes with approval," says the report of the Reference Committee on Medical Economics at the last session of the House of Delegates, "the efforts made by the bureau in making available unbiased data published in the 'Handbook on Sickness Insurance' which serve as a guide to debates, theses and addresses such as are carried on by high-school and college students on the subject of state medicine, sickness insurance and allied subjects. In view of evident propaganda of a radical nature which is carried on in some schools, increased efforts should be made to disseminate accurate information." Yet the number of physicians is proportionately small when compared with the number of voters and the number of legislators. Nor is this all. We are made to listen to the appeals and arguments of a class of men, who, though they are generally possessed of great wealth and of philanthropic desires, know little of medical economics. Then, too, the plan as proposed by the committee on the cost of medical care (I refer to the majority report) would seem to try to administer all medical relief from a central plant and to deny that personal touch, which is the essence of good medicine and often converts a troubled soul into a happy patient. If State medicine is to come, it will come. But, if it is to come, let us be masters in State medicine as well as in private practice. Let us not bend to the wishes of people, who, however well they may be educated, have only an academic interest in our profession. Let us be our own masters.

For some unknown reason the State seems to feel that the physician is indebted to it. Perhaps this is due to custom, perhaps to the fact that medical education as now conducted cannot be provided for in its entirety by the parent or the student. Substantial amounts must be provided either by private endowment or State subsidy. Why this paternalistic feeling on the part of the State should exist I do not know. But I do know that other men are trained in other professions, notably the law, with no such paternalistic feeling. Perhaps it is because the lawyer considers himself superior to the State. Does he not make the law? Does he not also interpret it? He seeks loop-holes and technicalities in the law. He takes no account of expense. If a man is sick, a physician is duly summoned, either one subsidized by the State or privately, but in general the remuneration is small or not at all. But in the case of a criminal, who has no means and must be defended, the State, as I understand it, will provide a fee. Often the mounting cost of justice is indeed appalling. I recently read that it had already cost the State of New Jersey some $175,000.00 to prosecute Bruno Hauptmann for the alleged murder of the Lindbergh baby, but can any one imagine the Commonwealth of Virginia appropriating a like sum for the medical attention of any one of its citizens, and especially one whose condition is due to a miscarriage of justice?

It is quite true that the question of jury duty has been eliminated from the public duty of the physician. Whether this is because the State feels that the physician's peculiar skill should serve for a higher duty or from the old English adage that "a butcher may not sit upon a man's life," I do not know. It is indeed hard to say. Then, too, in common with other trained men, a certain amount of courtesy will be allowed by the court. A physician may not be called to court until he is ready to testify and so be spared the trouble and annoyance of sitting all day in the court room. But we soon learn that this courtesy is not due us primarily on account of our being physicians, but is one resting upon the disposition of the individual lawyer. How many of us have sat all day in the court room for no purpose at all? And how much valuable time have we lost in so doing? Then, too, although the law would seem to specify that a physician's knowledge is his capital and that he should receive a remuneration for the knowledge and experience he has gained through so many years, how often is he made to testify without remuneration! And, again, how often is he begrudged a suitable remuneration or requested to reduce his fee for no purpose other than that counsel may be able to obtain his own without deduction!

But, if the State feels it has such a peculiar hold upon a physician that it can make him, under the guise of public health, provide for those in sickness (how often unremunerated), or guard the public in the face of epidemics, or give opinions for the purpose of dispensing justice, it does not seek to render him any special favor. Even though there are laws upon the statute books, he is brought into keen competition with patent medicine vendors, irregulars and charlatans. Physicians must be registered with the Federal government and pay an annual tax (though small) upon narcotics, albeit these are used to alleviate human misery. Even though a physician should through the goodness of his heart seek to alleviate the pain of an incurable patient, he is liable for prosecution unless the tax be paid. Although he is required to stand and pass an examination given by representatives of the State, he is also required to register in the district in which he wishes to practice. And all of these examinations and registrations are accompanied by a fee.

Lastly, although some commonwealths have seen fit to levy no license tax upon physicians, our own municipality insists upon its payment.

We as physicians have long sought for the abolishment of the medical license tax. We have argued that a municipality should only collect a tax from a business sufficient to remunerate itself for the police protection required for that business or for the amount of destruction likely to ensue from it. Thus liquor taxes should be unduly high. But how can this argument hold in respect to the unoffending physician? We are not a lot of unruly men requiring police protection or criminals requiring supervision. We have also claimed that on account of the large amount of charity we are forced to do, we should receive some special consideration. But, as we have said above, the municipality does not concede this argument. For my own part, I have always felt that, as the Church pays no taxes upon the buildings used for its own work or upon the rectory or parsonage in compliment to the results of its teaching upon morality, law and decency, so we should

receive some consideration on account of our own contribution to the health of the community. We constantly seek to abolish sickness and disease. And so I have often felt that, even though we received all of our compensation, or, if you will, an adequate fee, some recognition should be accorded. But I presume the tax collector feels that, after all, the best method of collecting a tax is to follow the old adage which we all learned as students of economics, namely, so to pick the goose that he may obtain a maximum amount of feathers with a minimum amount of squaking.

Apart from his professional relations with the State the physician is expected to do his duty as a citizen. In former years the observance of the law, encouraging production and the liberal arts, educating himself and his family (and if possible the public) and refraining from excesses of all kinds, was conceded to be his duty to the public. He now has a greater duty thrust upon him. He must protect his own rights and, if possible, those of his neighbor. He must strive for the liberty of the individual. He must study politics and policies seriously. He must vote for the man, whom he considers the right man, regardless of party affiliation. He must vote for the policy which he considers the right policy, regardless of personal friendship, selfish interest or family ties. He must do all in his power to prevent all forms of dictatorship. This he can only do by the exercise of his right to vote. No one can foretell the future. We are undergoing a revolution as truly great as that of France or of our own struggle for independence. No one ever dreamed that in the deposition of the Hohenzollerns a Hitler should arise, or that a Mussolini should exercise powers greater than those wielded by a monarch of the House of Savoy.

From a discussion of the relation of the medical profession to the State and to the public we must now turn our attention to our own relations with other medical men, or, if you will, a discussion of medical ethics. Hardly a day passes but that I am questioned in regard to what kind of advertising, in the public press or otherwise, is ethical; what kind of listing should appear in the telephone book, whether a physician's speciality should appear on the door of his office, and many other inquiries of an equally technical nature. I am also asked whether medical practice differs in some localities from that in other localities, and what kind of a man a firm should employ for the examination of its employees. These and many other questions I cannot answer. Similarly, should one physician be permitted to testify in court against another; whether a man, in order to gain practice, should reduce his fees from those generally accepted; whether a man shall be allowed to do contract work. Is it politic that the question of the division of fees should be reopened? Here, again, there would seem to be division of opinion. Can anything be done to prevent the damning of a man by faint phrase? Shall one man be allowed, so to speak, to "knife" another? To whom does the patient belong? Our profession has always been considered as a noble one and decidedly above the plane of trades-unionism. Let us continue to keep it pure and holy.

We have long since observed the result of the economic law of decreasing returns. This parallels Ricardo's law of decreasing returns in agriculture. There is more work to be done with a greater yield, yet the number of workers is such that the proportionate share of each is decreased. It is almost universally admitted that there is an over-supply of medical men. In an address before the Seaboard Medical Association at Newport News some twenty or more years ago by the late Dr. Edwin A. Alderman the point was stressed that, although the public demanded an educated man for a physician, there was in the South approximately one physician for every six hundred inhabitants. "Prussia," he continued, "considers herself over-stocked with one in two thousand." According to the last edition of the directory of the American Medical Association there were in the United States some 161,359 physicians. Our own Commonwealth of Virginia has 2,659 physicians with 2,441,000 inhabitants; our sister city of Richmond has 465 physicians with 182,929 inhabitants; our twin city of Portsmouth lists 76 physicians with 45,705 inhabitants; and our own city of Norfolk is credited with 246 physicians and 129,710 inhabitants, or approximately one medical man to every 500 people. One hundred and two physicians were licensed by the Virginia State Board of Medical Examiners at their last session. By some it is claimed that, although the number of physicians *per se* is too large, the number of good doctors is not so. This I deny most emphatically and would call your attention to the physicians of Norfolk. I know of no body of medical men more

capable than those over whom I have the honor of presiding.

That this over-supply of medical men is not likely to diminish has recently been distinctly stated by Flippin, of the University of Virginia. He states that at present some five thousand physicians are being graduated annually, while a total of only three thousand is necessary to take care of the increase in population and the deaths and retirements of the older medical men. He also states that on account of the increased curriculum and higher attainments that are now required, a student or his parent cannot supply the cost. Thus he estimates the cost of turning out a physician as varynig from $700.00 to $3,000.00 annually, depending upon the school, while the student himself contributes an average of only $250.00. This difference must be made up by the income from endowment or from a State subsidy. But the income from endowment or subsidy, to which we have referred, is not sufficient of itself to maintain the medical school, and, more, all that is received is necessary. Increased preliminary requirements have also been promptly met. The last few years before our present depression likewise witnessed a very material increase in the wealth of the nation. So that more fathers are seeking to give their sons a professional education. Then, too, the advent of the medical technician, the nurse-anesthetist and the "factory product" have served to reduce the work to be done by the physician. And to this we shall add that the general average of the public health is better. Epidemics, though they do occur, are more easily controlled. Many diseases, notably typhoid fever and malarial fever, have all but disappeared. So that, while there is much work to be done, it is of a different nature and is more easily accomplished. A venerable medical friend once remarked to me that he would like for all of the medical schools to close for ten years. We do not agree with him, but we must admit the validity of his argument and the seriousness of the problem. Within the last few months a questionnaire has been issued by the Medical Society of Virginia, asking among other things if the recipient knows of any one in the State of Virginia, who has suffered for lack of medical attendance. I am distinctly of the opinion that this question can be answered very positively in the negative.

It is my firm belief that in due season, if we are left alone, we shall be able to solve our problems in our own way. We shall regulate the number and quality of the new physicians. Nor shall we deny to any one the right of studying medicine if he wishes. Just how we shall do this no one can say, but I do feel that a solution is imminent. Similarly, the ever recurring allegations that the number of available hospital beds is excessive, that the Federal government is erecting too large and too luxurious hospitals, that hospitals are competing with their staffs, that the out-patient or dispensary patient is not sufficiently investigated, as to what constitutes the so-called "low income group" and other questions of a similar nature will, I believe, disappear. We shall have co-operation and not competition. If Mr. Business Man is going to visit a certain city, he will seek a hotel and accommodations within his means. He should show the same judgment in his choice of a hospital and its accommodations, whether the ward, the pavillion for those of moderate income, or the room intended for those of ample means. Mrs. Poverty cannot expect surroundings such as those of Mrs. Croesus. "If a man is sick, he is sick," a devoted Sister of Charity once remarked to me, "If he is not able to pay, he should enter the ward and not attempt to run up a bill with a private room and nurses that he can never pay." An old Frenchman once remarked that short accounts make good friends. "Keeping up with the Joneses," so to speak, is indeed a very poor method of caring for the sick.

It is exceedingly to be hoped that the recent advent of hospital insurance, both in Norfolk and in other cities, will prove a success. Theoretically, at least, it has many good points. The only question is whether the border-line cases can be admitted to the hospitals and whether the individual, who is insured, will take advantage of the situation. Unfortunately, the American Medical Association does not look with favor on the scheme. In the report of the Reference Committee on Medical Economics at the last session of the House of Delegates, from which I have quoted above, we find the following: "Your Committee commends with special emphasis the stand taken by the bureau with regard to group hospitalization. It is convinced that the natural development of such schemes would lead sooner or later to an inclusion of medical service in one form or another with inevitable deterioration in the quality of service. It is quite in agreement with the statement that there is grave doubt that any plan

of group hospitalization is using an actually sound base for premium rates." This report is signed by Braasch and others and is quoted here merely from a sense of duty. Having had no experience myself, I should be the last one to express an opinion.

All of the foregoing inevitably leads us at last to a consideration of the relations between the physician and his patients, his family and himself. This again leads to many questions of special interest. The physician is compelled by custom to maintain an office and residence in conformity with his station in the community. His living expenses are necessarily high. In order to make ends meet, it is necessary either that he be a man of means, or that his practice yield a certain income. As in the other walks of life, however, Dame Fortune sometimes frowns. He must, if he can, save for the rainy day. Otherwise a constant worry will tend to bring about heart disease. Only recently we have lost three of our younger men and one of middle life by coronary occlusion. In the case of two of them it is believed that constant worry played a leading role in the etiology. Handicapped in this way, the physician is unable to do justice to all. In a recent continued article entitled "After All," a sort of autobiography, as it were, Elsie de Wolf describes the life of her father. He was a physician in New York specializing in tuberculosis. Often he would worry and exclaim that he was "broke." But even then the house continued with its usual routine. Upon his death, however, it was found that he was a better prophet than the family had thought, for "broke" he was. How many of the widows of physicians have had to maintain boarding houses for a livelihood! How many of their daughters have had to seek positions!

And this leads to the matter of the physician's income. It is justly claimed that the State is responsible for the indigent poor. So municipal hospitals have been erected. Other hospitals have been subsidized and in some cities municipal clinics have been maintained. Generally, however, it is expected that the medical staff, except such men as are employed by the municipality, will give their services free. Some physicians have felt, however, that the free horse is being driven too far. The medical men of Dayton, Ohio, I am told, have refused to attend free clinics. They probably have some reason. Detroit, on the other hand, I am informed, has abolished the municipal clinics. By alloting such cases as are usually taken care of in the clinic to such physicians as are willing to receive them, though at a lesser fee from that usually charged, it has been found that the municipality saves money, the income of the physician is increased and his time conserved and all are happy. This liability is likewise accepted by the Federal government, but it is the experience of most of us that the amount appropriated for the physician's fee seems rather in the nature of a dole than as a compensation for professional services. Detroit has also, we read, sought to solve the problem of deferred payments. A centralized bureau has been established, to which the prospective patient or a member of the family is referred. An estimate of the approximate cost of hospitalization or nursing, physician's attendance, dentist, etc., is made. Arrangements are then made with the debtor whereby he can settle the indebtedness, generally in monthly installments covering a year. As these payments are made, they are prorated among the several creditors. Perhaps such a scheme might help to solve many of our own problems.

As a fitting conclusion to this discussion of the medical man in his economic relations with the State and the public, his confreres and the hospital and his family, his patients and himself, it might be well to apply to ourselves the scriptural question, "What do men say that I am?" It would indeed be more than interesting to discuss what the laity, the legal profession and the Church have to say about us. But time and space forbid. We shall, therefore, briefly consider what a few of the dramatists and novelists have to say. Thus in Shakespeare's Macbeth the doctor is considered as somewhat of a superman; he is asked to cure worry and mind disease, even as he attempts to cure bodily ills by some form of drug. In Le Sage's Gil Blas the physician is a charlatan of the most pronounced type and as a special favor leaves the secret of his success to the youthful Gil Blas. His patients are treated by bleeding and water. In Sem Benelli's Jest we find a stupid fool, only to be tossed about at the mercy of the hero. Goethe, on the other hand, has had Dr. Faustus, who deals in incantations, sell his soul to the Devil as a reward for the renewal of his youth. The physician plays the role of a detective in certain of the modern and contemporary stories. These and many more

might be mentioned. Personally, I like the old doctor as portrayed by Ian Maclaren. The very humaness of the Scotch physician appeals to me. Generous to a fault, loved by his patients, tender as a woman and upon occasion most uncompromising, these are his characteristics. Even upon his death bed he remains the same. Finally his mind wanders. He becomes as a little child, calls for "Mother" and dies, leaving behind him a good name and a sense shared by all alike of having done his duty.

I should, however, leave unfinished this discussion did I not bring to your attention the three nineteenth century (or, more properly speaking, Victorian) physicians mentioned by Thackeray in his Pendennis, the book over which we have all laughed and cried. First, we have Pendennis' father, a physician, who, as the author expresses it, helped ladies when the children arrived and set bones. Becoming disgusted, he bought a place in the country, established himself as a small landed proprietor and called himself "Squire." Next, though not in the order of sequence as they appear in the book, we have the case of Mr. Huxter, the poor physician, whom it is desired to help, but not to offend. Hence Lady Rockminster pretends to become sick, goes to bed and sends for Mr. Huxter. He, in turn, prescribes medicine, which is never taken, pays Lady Rockminster a few visits, feels that his patient is constantly improving and all goes well. And, last, there is the fashionable London physician, who attends Pendennis when he is in chambers. After a rather long illness and prolonged convalescence the hero, of course, regains his health. Then requesting a bill from the great London physician, he is informed that there is none. Personally, I have always felt that many of the incidents of the work were more or less autobiographical. In the edition of the work edited by Thackeray's daughter, Mrs. Ritchie, she tells of how her father also was at one time ill. He, likewise, was attended by a more or less fashionable physician, but she remarks that the medical man, as depicted in Pendennis, was not the only one to refuse a fee. In other words, one gathers from the text that the beloved physician, in the opinion of the novelist at least, is the one, who accepts no fee. But human nature is always essentially the same. "Were there not ten men?" asks our Saviour. "And only one has returned to give thanks."

Medical Arts Building.

DERMATITIS MEDICAMENTOSA FROM DILAUDID.*

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Dilaudid (dihydromorphine hydrochloride) was first described in the German patent literature[1] of 1923. Since that time it gradually became more popular in this country as a substitute for morphine. Its popularity has been due, in part if not chiefly, to the claim that it is not habit forming and has little or no effect upon the peristalsis of the alimentary tract. However, recent reports indicate that dilaudid is not free from tolerance and addiction evoking properties.[2]

It is desired to report herewith four cases of skin eruption following the hypodermic use of dilaudid post-operatively. In these cases there appeared a fine, red, papular eruption of the skin of the face, neck, body and limbs following the hypodermic administration of dilaudid to relieve post-operative pain. The eruption appeared within a few minutes to an hour after the administration of the drug and in two cases was so severe that it lasted several days and became quite an unpleasant complication.

*Read before the Alexandria (Va.) Medical Society at its monthly meeting on October 17, 1935.

REPORT OF CASES

Case 1. Mrs. P., white, female, registered nurse, age 32, admitted October 5, 1934, with Bartholin's abscess of two days' duration. Her past and family history were negative. Present illness first became evident about two days ago when tenderness was first felt in the right vulva. There had been no noticeable leucorrhea, dysuria or pelvic pain. Slight pain had been noticed in wrists, ankles, and knees for two days. There were no previous symptoms of gonorrhea. She had not taken any medicines and had eaten scarcely little for forty-eight hours.

Physical examination showed normal skin and

oral mucous membranes; head, chest, abdomen and limbs were normal throughout. Large abscess in right vulva size of medium-sized orange, obstructing entrance to the vagina.

Operation was performed under nitrous oxide anesthesia. The abscessed gland was so large that it was ruptured while being dissected but the sac was removed as far as it could be distinguished with the naked eye. The fossa was then cauterized with the electric cautery, thereby destroying any remaining fragments of the sac. Morphine sulphate gr. ¼ with atropine sulphate gr. 1/150 was given before the operation. Codeine sulphate gr. 1 was given that night and the following night. Luminal gr. 1½ was also given the second night. She received no other medication and left the hospital on the third post-operative day. She experienced some pain her first night home and took dilaudid gr. 1/32 on her own initiative, by hypodermic. Within an hour she was awakened with a severe petit rash over her entire body which itched profusely. This rash subsided spontaneously within six hours. She was advised not to repeat the drug but did so two nights later with a similar but more pronounced rash resulting. This time she also had some injection of the conjunctivae and a temperature of 99.5 F. which was the first elevation of temperature since the first post-operative day.

Case 2. Mrs. H. History of pain and tenderness in lower right quadrant at intervals for three years. For past six months suffered from constipation and flatus.

Her mother died of chronic heart disease and her father of chronic nephritis. One brother has cancer of testicle. Family history is otherwise negative.

The patient had the usual childhood diseases, including diphtheria. She was treated with diphtheria antitoxin. She has had no previous urticaria or skin diseases. Menses irregular, occurring usually about every three weeks and lasting from three to six days. There has been profuse leucorrhea since a childbirth five years ago.

Physical examination reveals a vivacious white female, age 31. Skin and oral mucous membranes normal. Systolic apical murmur; heart not enlarged. Blood pressure 118/80. Lungs clear. Tenderness over McBurney's point with slight rigidity of the right rectus. Slight tenderness in lower right quadrant.

Vaginal examination reveals chronic endocervicitis. Smears negative for the gonococcus. No tumor or masses felt. Tenderness in the region of the usual site of the appendix.

Operation was under avertin and nitrous oxide anesthesia. A currettage was done and the cervix cauterized with the electric cautery. A right rectus incision was then made and the appendix found to be very large and tied down by old adhesions. It was removed. The female adnexa were found to be normal in all respects. Morphine sulphate gr. ¼ with atropine sulphate gr. 1/150 was given before operation. Four hours later the morphine was repeated and again at 8 A. M. At 5 P. M. the next day, dilaudid gr. 1/32 was given hypodermically. Within half an hour the patient had violent itching over the entire body. She also vomited and complained of feeling "very weak." This condition continued for two days and gradually subsided. Temperature was not elevated above 99 F. after first post-operative day; however, it dropped to 97.4 after the administration of dilaudid but returned to normal the next day. The dilaudid was not repeated. One hypodermic of pantopon gr. 1/3 was given the following day and codeine sulphate gr. 1 given that night and the two subsequent nights with no return of the rash.

Case 3. Mrs. Z. Female, white, stenographer, age 33. Had severe abdominal pains for ten days prior to menses. For past four months the menstrual flow has been very profuse but pale in color. The last attack of abdominal pain was localized in the lower right quadrant, and was accompanied by tenderness in the lower right quadrant, nausea and constipation.

She had the usual childhood diseases, malaria, and pneumonia, followed by secondary anemia. She had always had a healthy skin and personal history was otherwise negative. Her mother was a drug addict and died insane. Her father was a physician and was also a drug addict, succumbing to an overdose of morphine. Two sisters are insane. The family history is otherwise negative.

She was operated upon under avertin and nitrous oxide anesthesia. Through a right rectus incision the appendix was found to be large and obstructed. It was tied down by a few adhesions. The pelvic adnexa were found to be normal as were other abdominal organs. Both Fallopian tubes were removed as a sterilizing procedure. The uterus was

suspended by Olshausen's method. A currettage and cauterization of the cervix was done prior to the laparotomy.

Morphine gr. ¼ with atropine sulphate gr. 1/150 was given prior to the operation. Dilaudid gr. 1/20 was given nine hours later and repeated the next day. This second dose of dilaudid was followed by severe itching and profuse rash. There was some edema of the eye-lids and injection of the conjunctivae. There was nausea but no vomiting and a slight diarrhea for four days. There was no fever above 99 F., but there was a daily drop of temperature to 97.4 for four successive days. Opiates were not given further, but allonal and sodium amytal were given with no return of the urticarial distress. This case presented the most severe reaction of the series as she was most uncomfortable and required two special nurses which she had not required otherwise. She suffered considerably more from this unfortunate accident than from the surgery, as she recovered much more quickly and with less pain than the average patient.

Case 4. Mrs. C. White, housewife, age 29. Patient suffered pain and tenderness in lower abdomen, chiefly on the left side, starting a few days after menses. Nausea and vomiting followed the onset of pain. This condition existed for three years and gradually increased in severity. She had had a bloody, foul-smelling leucorrhea for two weeks. Her usual period occurred two weeks previously.

She had the usual childhood diseases and had been well until the onset of the present illness. She has been married for two years with no pregnancies.

Her father died at 62 from cerebral hemorrhage. Mother died at 59 of tuberculosis of throat and lungs. One sister died of Hodgkin's disease and one died of childbirth. The family history is otherwise negative.

Physical examination was negative for skin and mucous membranes. She was normal throughout except for tenderness in lower abdomen which was greater on the left side. Vaginal examination revealed a small tender mass on the left side, slight tenderness of the appendix and chronic endocervicitis. Smears were negative for the gonococcus.

She was operated on March 14, 1934, under ethylene-ether anesthesia. Currettage was done first, and then a mid-line incision was made. The appendix was subacutely inflamed and was removed. An intraligamentory adenofibroma the size of a small lemon was removed from the left broad ligament. There was slight inflammation of both tubes but it was not deemed necessary to remove them. The other pelvic and abdominal organs were found to be normal.

Morphine sulphate gr. 1/6 with atropine sulphate gr. 1/150 was given before the operation. Morphine sulphate gr. ¼ was given one hour after the operation to relieve pain and repeated in seven hours and again the next day. The following night she was given dilaudid gr. 1/32 by hypodermic and about one hour later she complained to the nurse of severe itching and became quite restless. She also had considerable nausea and vomited several times, which was the first such symptoms she had experienced since the operation. The rash and itching subsided the next day but the nausea and vomiting persisted for two days and was finally overcome by small doses of cold champagne by mouth and enemas. No further narcotics were given but triple bromides were given at bedtime for several nights. There was no further rash or itching. Temperature and pulse were 100 the first post-operative day. Temperature was 99.6 after taking dilaudid and the pulse 90, after which both dropped to normal. She made an otherwise uneventful recovery.

These four cases of dermatitis medicamentosa following the use of dilaudid are reported to illustrate the fact that skin eruptions occur following the use of this drug as well as following the use of other narcotic drugs. Some criticism may arise as to the proof that the eruption was caused by dilaudid since some of these patients received morphine and some avertin also.

Cases two and three were given test doses of dilaudid gr. 1/32 two weeks and three weeks respectively after complete recovery, with a return of the rash. They were also given test doses intradermally with positive wheals resulting. Case number one fairly well proved that her rash was due to dilaudid by repeating the drug and having the rash return. Case number four was not available for further tests.

These cases are from the private practice of the

author and were operated upon by him at Garfield Memorial Hospital.

Search of the literature has failed to show that cases of dermatitis medicamentosa from dilaudid have been reported previously.

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2100 Massachusetts Avenue, Northwest.

INTRA-OCULAR FOREIGN BODIES (MAGNETIC).*

A. A. BURKE, M. D.,
Norfolk, Va.

In presenting the subject of the Intra-Ocular Foreign Bodies (Magnetic), it is done with the thought that by laying a little stress on certain phases of this type of injury, I may say something which will be of some value to the general surgeon rather than to the specialist. As I have myself been confronted with difficulties in the attempt to extract magnetic particles from within the globe of the eye, I shall briefly tell you of my difficulties and how I attempted to overcome same. I wish further to discuss with you a few arguments *pro* and *con* which have been advanced by those interested in this subject.

Surprising to all of us at times is that, when we have discovered a foreign body within the globe, there is no pain, and in many instances very little reduction in the visual acuity, especially if we see these cases within the first twenty-four hours. Others consult us days or even weeks after complaining of nothing but a slight blurring of the vision. Others seek aid when, days after an injury, there is a beginning irritation of the eye.

A case typical of the type mentioned above consulted me stating that four days before he sought aid, something struck him in his left eye, and while there was a sharp twinge when the object hit him, the pain was only of a few moments' duration, and whereas even then he had no pain, he was worried because of some little blurring of his vision.

Examination of the eye revealed a minute scar on the cornea, a very slight cloudiness of the lens at its periphery, and on ophthalmoscopic examination a very small foreign body, appearing to be about the size of the head of a pin, was seen within the vitreous, lying close to the retina.

In contra-distinction to the absence of pain in intra-ocular foreign bodies, we know that corneal foreign bodies do produce pain, the cause of which is obvious.

Having had the above facts impressed forcibly upon me in five or six cases, it is with the utmost care that I examine every patient giving a history of having been struck in the eye, and consider each and every case one of potential intra-ocular foreign body.

There seems to exist a method advocated by some ophthalmologists of proving or disproving the presence of particles within the globe by using a magnet, to draw the steel to one side or the other of the globe of the eye, and if the patient experiences any pain in the eye, or states that he can feel somthing move, then the diagnosis is supposed to be conclusive. There are three reasons why this method should not be used.

First, it has been asserted, and I think the point is well taken, when the above-mentioned method is used, if a magnetic object is present, we draw it from side to side or from before backward, we produce small islands within the vitreous body, which in turn (so the pathologists tell us) give rise to fibrous bands, resulting in or are likely to produce a detachment of the retina.

Second, in many of the minute foreign bodies, even though a giant magnet is used, it will not have any effect on the particle at all, as I hope to prove further on in the subject.

Third, assuming that a foreign body was located within the vitreous, before the magnet was

*Read at a meeting of the Norfolk and Western Railway Surgeons' Association, at Atlantic City, N. J., September 26-27, 1934.

used as a diagnostic means, and because of that procedure the particle was drawn so as to become entangled in the ciliary body or iris, it would complicate what was before a reasonably easy case to extract, and thus minimize our chances of obtaining a good result.

With the scientific means at our command, not only of detecting foreign bodies within the globe, but also the accurate localization of same, the consensus of opinion I believe that the method is of so little value compared with the damage that it might do, that it should not be used.

It has been asserted by some ophthalmologists that an accurate localization is not necessary. I can't believe that one who sees many of these cases will agree with that thought, and if my experience of twenty years has amounted to anything, it is that an accurate localization is necessary, as it has been of inestimable value to me in helping to decide what course to pursue.

To cite a case briefly will, I believe, show why we should not be satisfied with anything short of accuracy.

F. B., Age 26.—Was struck in the left eye the day before he consulted me. Shortly after, he was unable to see very well. The fundus could not be made out on account of the cloudiness of the lens. An X-ray report was to the effect that a foreign body was in the orbit about 2 mm. posterior to the sclera. To be doubly sure I had a second localization made by a different roentgenologist and the report was the same; consequently nothing was done in an attempt to extract the particle. However, after the inflammation of the eye had subsided, a needling was done, together with a second needling about two months after the first. When the lens had become absorbed enough to enable me to examine the fundus, there was to be seen a small scar near the macula showing where the steel had passed through the globe and was undoubtedly lying in the orbit. With a correcting lens, the vision is 20/200.

It is true that the vision isn't anything to boast of, but had not the piece of steel been so close to the macula, there is no reason why the vision should not have been 20/30 or even 20/20 with a correcting lens. However, without the aid of the localization, it would have obviously necessitated unscientific surgery to no avail, probably resulting in a complete loss of the globe and enucleation.

Arguments have been advanced that in small localities they have not the facilities for localization of intra-ocular foreign bodies. My only question to that argument is, would one be satisfied with anything short of the proper scientific handling of a case, were that his own eye? Personally I feel that anything short of conscientious and painstaking endeavor borders on criminal neglect; and any and every means to save an eye and as much vision as possible is our duty, not only to our patient but to ourselves and I stand firmly by the conviction that there are no short cuts to follow.

The method I have been using for removal is the scleral for objects located posterior to the lens. The question has been argued to my own knowledge for twenty years as to the better route, the scleral or anterior, and today both have their staunch advocates, who no doubt will continue to use the surgical procedure, which gives them the best result.

For the benefit of the general surgeons who are not familiar with the terms, I would state that the scleral route is performed by making an incision in the conjunctiva, then through the sclera, and the steel is delivered through the scleral incision. The scleral opening is to be made well posterior to the ciliary body.

The anterior route is to attract the foreign body around the lens into the anterior chamber of the eye, then making a corneal incision and extracting the steel. The objection raised by those opposed to the scleral route, is that a detachment of the retina is more likely to occur because of the injury to the retina when the incision is made. My observation has been that the detachment is due more to the injury rather than to the operation. I have had an opportunity to observe three cases, which I beg to report. One in which a piece of steel, lodged in the retina about four m.m. to the nasal side of the optic nerve, was removed through the scleral route, fifteen years ago. Vision after the operation was 20/20 and up until December, 1933, the vision was still 20/20, and there was no evidence of any detachment. In two other cases in which a piece of steel was lodged within the vitreous, removal was by a posterior route, one eight years ago and one eleven months ago, neither showing any evidence of detachment, and the vision equals 20/30 and 20/20

respectively. However, I feel that, whereas the question has been argued for years as to the better route of removing magnetic foreign bodies from the globe, the logical thing for us who are interested in these cases is that an observation should extend over a period of years rather than for a few weeks or months. By so doing we will be in a better position to know what percentage of detachment will be due to the operation. We should ascertain if possible if a detachment was present before the operation, so as to differentiate between a detachment caused by an injury or following the operation. At this writing, I am convinced that those who would advise too strongly against the posterior route because of the detachment which would follow are a little over anxious.

Objections have been raised that the giant magnet is too strong, and that anything as strong as the magnet would tear the eye severely, and it never should be used. With that thought I must take issue for I have been using the giant magnet for about twenty years and, instead of being too strong, I have found that the minute particles of steel within the vitreous will not be extracted by the magnet. To offset this I have used a punctum dilator. This is first placed on the magnet and the projecting point of it made to penetrate the scleral incision into the vitreous toward the foreign body. By the use of this method my results have been successful in extracting the steel. It is true if you have a large piece of steel within the globe it might do damage, but to offset that danger I use some steel instrument, for instance, a pair of artery forceps, and allow them to project from the magnet, which of course, minimizes the power to pull.

The method I use is the usual operation of election; the only difference is that the incision in the conjunctiva is made semilunar in shape, and then reflected back so that when the incision in the sclera is made it is also made semilunar in shape, but the direction of the arc is opposite to that which is made in conjunctiva. My reason for doing this is that when the conjunctiva is pulled forward and reattached, it covers up the scleral wound to a greater extent. The incision is made well back of the ciliary body and between the recti muscles to the nasal or temporal side depending upon our decision to remove the steel from either side.

It is my good fortune so far not to have had an infection of an eye in using the above-mentioned method. There are many advocates who prefer to use the anterior route, and assert with a great deal of truth about how many particles can be drawn in the anterior chamber, and then removed. Undoubtedly this can be done in many instances successfully, and would be done in many more successful cases if one had the cooperation of the patient, but there seems to be an ever present curiosity in many who cannot resist the temptation to rotate the eye, and who will not follow directions to do exactly as they are told, thereby jeopardizing and spoiling what would be a successful deliverance of the particles.

Many years ago it might not have been amiss to warn that these operations should be done with the same careful technique which is used in operating on abdominal cases, but in recent years I do not believe that the average ophthalmologist needs any such admonition.

Medical Arts Building.

Correspondence

Correction.

FEBRUARY 10, 1936

TO THE EDITOR:

I notice in your journal of February, 1936, an item "Physician Wanted at Amissville, Va," written by Mr. J. C. Cropp. I would like to state that I have been doing this practice for the past eighteen years and this is a small country village which can get a physician from four different points in from fifteen to thirty minutes and that the community is now well served. It has not had an active physician in that community for the past forty years.

I would advise anyone considering this location to investigate the situation thoroughly.

J. R. BOLDRIDGE, M. D.

Rixeyville, Va.

Public Health Statistics

I. C. RIGGIN, M. D.
State Health Commissioner of Virginia

The communicable disease reports received at the office of Dr. G. F. McGinnes, State Epidemiologist, for the month of January, 1936, show the following cases compared with the same month in 1935:

	1936	1935
Typhoid and Paratyphoid Fever	17	24
Diphtheria	101	119
Scarlet Fever	221	272
Measles	92	1,850
Meningitis	13	22
Poliomyelitis	1	3
Rocky Mountain Spotted Fever	0	1
Typhus Fever	0	1
Undulant Fever	4	1
Tularaemia	14	8
Smallpox	0	5

RURAL HEALTH SERVICE

At the beginning of the fiscal year 1934-35 there were eleven local health departments, comprising fourteen counties, and representing 22.3 per cent of the rural population of the State receiving full-time local health service. At the close of this year, June 30, 1935, the following health districts, eighteen in number, were in operation: Alleghany-Rockbridge; Arlington; Augusta; Brunswick-Greenesville-Mecklenburg; Dickenson-Lee-Scott-Wise; Fairfax; Halifax-Pittsylvania; Henrico; Isle of Wight-Nansemond; Joint Health Department composed of Albemarle County-Charlottesville City-University of Virginia; Montgomery; Norfolk-Princess Anne; Northampton; Nottoway-Prince Edward; Peninsula which includes Elizabeth City-James City-Warwic-York counties; Southampton; Valley which includes Greene-Madison-Page-Rappahannock-Rockingham-Shenandoah-Warren counties; and Wythe. These eighteen health districts comprise thirty-seven counties and represent 48.6 per cent of the rural population of the State receiving full-time health service.

Since this time, one new health district has been formed; Hanover district in September, 1935; and in October, 1935, Buckingham county joined the Nottoway-Prince Edward health district.

This increase of more than 100 per cent in the rural population served by health districts is very encouraging and very probably indicates that Virginia's rank in the nation is now considerably higher than in previous years.

On November 1, 1934, there was established an office of the State Health Department in Abingdon, Va., under the supervision of a deputy director of rural health and comprising on its staff a sanitary engineer, a supervising nurse, a regional director of sanitation, a laboratory technician and a chief clerk. Because of the distance of Southwest Virginia from Richmond, at which place is located the State Health Department, and the difficulty of rendering prompt and adequate attention to this section of Virginia, particularly in times of epidemics, this office was established and is now fulfilling a vital need in the rural health work of Virginia.

The Federal Social Security Act, approved August 14, 1934, offers real opportunities for further improvement in public health services. The act provides $8,000,000 each year to be used for the purpose of assisting States, counties, health districts and other political subdivisions of the States. This sum is to be distributed on the basis of (1) population; (2) the special health problems; (3) the financial needs of the respective States. Rural areas are to be given primary consideration, and thus Virginia should be able to improve her status relative to rural health services.

Woman's Auxiliary to the Medical Society of Va.

President—MRS. FLETCHER J. WRIGHT, 49 S. Market St., Petersburg.

President-Elect—MRS. F. D. WILSON, 5352 Studley Ave., Norfolk.

Corresponding Secretary—MRS. MEADE EDMUNDS, Walnut Hill, Petersburg.

Recording Secretary—MRS. HAROLD W. POTTER, 70 33rd St., Newport News.

Treasurer—MRS. REUBEN F. SIMMS, 2502 Hawthorne Ave., Richmond.

Chairman, Press and Publicity—MRS. JAMES B. STONE, 15 Maxwell Road, Richmond.

Message from the President.

In greeting you again, it is hard to realize that Spring will be officially due when you read this, and that means our work for this administration is more than half over, since not many Auxiliaries meet during the summer months.

So much should be crowded into these next three months, that we cannot consider putting off one thing now for tomorrow, that could be done today. Has your Auxiliary mapped out some *special* work for this season? If so, are you having the satisfaction of realizing its accomplishment? If not, let me beg you now to set yourself to some special task, for not one county could truthfully say: "Our county has

no need for any special welfare work from us." Opportunity lies all around us everywhere, and even if any group could not find it in their community, city, or town, they need only look to the calls and opportunities offered by our State Auxiliary, for there is no dearth of needs there!

Billy Sunday once said: "More men fail through lack of purpose, than through lack of talent." Our work cannot "drift," for either it moves forward to accomplish a real purpose, or it stands still, which means certain stagnation, and eventual death.

Lincoln's words could serve us well today: "And having thus chosen our course, let us renew our trust in God, and go forward without fear, and with confident hearts."

Several of our County Auxiliaries have complied with practically every request and project which our National and State Program has outlined. Others yet will do so, and some may just "intend" to, but, unfortunately, our *good intentions* can't be given in any official report from our organizations!

Let me ask again, that you take advantage of the generosity of the space given us in this magazine. Read our news each month, and have it read, for the benefit of those who have overlooked it, at your Auxiliary meetings, as a part of your program. Send our Press and Publicity Chairman *all* news from your Auxiliary, for reading of your good works not only gladdens the hearts of your State officers, but often inspires some other group to undertake greater things. "If we cannot do great things, we can do small things in a great way."

Our National News Letters is published four times a year, and brings us worthwhile items, and news of other Auxiliaries from every District in the United States. Each Auxiliary should have at least one copy of this. It may be secured from our National Press and Publicity Chairman, Mrs. J. P. Simonds, 25 E. Walton Place, Chicago. The subscription price is $1.00.

Please let me thank you for the cordial invitations which have come to visit your Auxiliaries. Should this office, as your President, hold any hardships, they would be more than offset by the pleasure of the contacts made when I visit your Auxiliaries, and meet personally, many members who are unable to attend the State meetings. It has been a joy to meet with several Auxiliaries already, and other invitations have been accepted for the near future. May the March winds blow aside all doubts or postponements that may have been considered in your Auxiliary work, and may the April showers water and nourish every good seed that you have planted, so that its full growth and maturity may be happily realized.

Faithfully yours,
ANNE S. WRIGHT,
(MRS. FLETCHER J. WRIGHT),
President, State Auxiliary.

The Auxiliary to the Norfolk County Medical Society

Held their annual meeting in the Library of the Medical Arts Building, Norfolk, on January 13th, with the President, Mrs. Eugene Lowenberg, presiding. This meeting was strictly a business one, and the annual reports of officers and chairmen of standing committees were read at this time. On motion, the Auxiliary voted to add $100.00 to its Benevolent Fund. On behalf of the Auxiliary, Mrs. Franklin Wilson presented to Mrs. Lowenberg a gift expressing the appreciation of the members. Mrs. T. Elmore Jones, Chairman of the Nominating Committee, presented the following slate of officers:

President—Mrs. C. C. Smith.
President-Elect—Mrs. B. A. Doggett.
First Vice-President—Mrs. Millard B. Savage.
Second Vice-President—Mrs. E. R. Altizer.
Third Vice-President—Mrs. R. M. Reynolds.
Recording Secretary—Miss Carol Simpson.
Corresponding Secretary—Mrs. Albert Wilson.
Treasurer—Mrs. Albert V. Crosby.

This slate was accepted as a whole, and the officers duly installed by the Parliamentarian, Mrs. M. N. King.

CAROL F. SIMPSON,
Reporter.

The Auxiliary to the Mid-Tidewater Medical Society

Met in West Point on January 28th. Mrs. Fletcher J. Wright, State President, was to have been the guest of the Auxiliary at this meeting, but due to weather conditions, was unable to be present. Since Mrs. Wright was to have been the guest speaker, no other program was planned. Luncheon was served, after which a short business session was held. The Auxiliary will meet again in Saluda on the fourth Tuesday in April.

MRS. M. H. HARRIS, *Reporter.*

Auxiliary to the Postgraduate Medical Society.

This met in Petersburg January 29th, with the President, Mrs. E. L. McGill, presiding. Mrs. Philip Jacobson was appointed chairman of the Finance Committee, and Mrs. Meade Edmunds, Chairman of the Social Committee. A motion was made and carried that $10.00 be set aside for a sinking fund for expenses of the State Auxiliary. A linen shower for the hospital was discussed, and Mrs. H. M. Snead appointed chairman of this committee. The last Tuesday in March is the date selected for this shower. It was decided that the Auxiliary cooperate in some way with the nurses in helping to repair the Nurses' Home. A tea for the nurses was discussed, but no action was taken on this subject. The Woman's Page from the VIRGINIA MEDICAL MONTHLY was used as the program and read before the members at this meeting.

MRS. ALLEN BARKER,
Reporter.

James City-New Kent Medical Auxiliary.

The January meeting of this group was held at the home of Mrs. B. I. Bell in Williamsburg, with the president, Mrs. A. M. Snead, of Toano, in the chair. After the business session, Mrs. Smoot gave a paper on the importance of the care of children's teeth, supplementing her talk with X-ray pictures. Mrs. L. V. Henderson was in charge of the social hour.

The March meeting will be held at the home of Mrs. E. B. Kilby in Toano.

The Auxiliary to the Richmond Academy of Medicine

Held its February meeting on the 14th, with Mrs. A. G. Shetter, the president, presiding. It was voted to contribute a minimum of $10.00 to the State Auxiliary sinking fund. There was no program due to the illness of the invited speaker, but matters of routine business were discussed.

Change of Address.

Mrs. Reuben F. Simms, State Treasurer, has moved since the printing of the Auxiliary stationery, and her address is incorrectly given thereon. The correct address of Mrs. Simms is 2502 Hawthorne Avenue, Richmond, Va.

Truth About Medicine

In addition to the articles previously enumerated the following has been accepted by the Council on Pharmacy and Chemistry of the American Medical Association:

National Drug Co.

Normal Horse Serum 10 c.c. Ampule Vial.

Normal Horse Serum 100 c.c. Cylinder with Intravenous Outfit.

Accepted Devices for Physical Therapy

The following apparatus has been accepted by the Council on Physical Therapy for inclusion in its list of accepted devices for physical therapy:

Aloe Short Wave Diatherm.—This unit is recommended for medical and surgical diathermy. It is a conventional two-tube oscillator, push-pull type of circuit, modified for physical therapeutic purposes. The tissue heating ability of the machine was investigated and found to be satisfactory. Burns may be produced by this machine but they may be avoided by ordinary precaution. A. S. Aloe Company, St. Louis, Mo. (J. A. M. A., January 11, 1936, p. 122.)

New and Nonofficial Remedies

The following products have been accepted by the Council for inclusion in New and Nonofficial Remedies:

Mapharsen.—The hemialcoholate of 3-amino-4-hydroxy phenylarsine oxide hydrochloride.—HCl. (NH_2) C_6H_3 (OH) AsO.$\frac{1}{2}C_2H_5OH$. It contains approximately 29 per cent of trivalent arsenic. Mapharsen is proposed for the treatment of syphilis. It is stated to exhibit a relatively constant parasiticidal value. It is claimed to have a rapidly beneficial effect, particularly on early syphilis. The reactions following the use of mapharsen have on the whole been less severe than those observed after the use of arsphenamine or neoarsphenamine. The product is supplied in the form of ampoules 0.04 Gm., 0.06 Gm., 0.4 Gm. (hospital package representing ten doses of 0.04 Gm. each), and 0.6 Gm. (hospital package representing ten doses of 0.06 Gm. each). Parke, Davis & Co., Detroit.

Capsules Ipral Sodium, 2 Grains.—Each capsule contains ipral sodium (The Journal A. M. A., June 1, 1935, p. 1999) 2 grains. E. R. Squibb & Sons, New York.

Ipral-Amidopyrine Tablets, 4.33 Grains.—Each tablet contains ipral (ethylisopropyl-barbituric acid) 2 grains, and amidopyrine 2.33 grains. E. R. Squibb & Sons, New York.

Squibb Cod-Halibut Liver Oil (New and Nonofficial Remedies, 1935, p. 300).—A blend of oils from the livers of the cod and halibut in such proportions that the finished product has a vitamin potency of not less than 4,200 vitamin A units (U. S. P. XI) per gram and 700 vitamin D units (U. S. P. XI) per gram. E. R. Squibb & Sons, New York.

Propaganda for Reform

Aluminum in Food.—Propaganda as to possible dangers resulting from the use of aluminum cooking vessels is so persistent that one suspects ulterior motives in its background. The problem has been investigated at various times, and in the presence of a renewed criticism of the widespread employment of aluminum vessels another recent study of the subject has appeared under the auspices of the British Ministry of Health. The accurate determination of aluminum in food and biologic material, according to Monier-Williams, who wrote the report, is a difficult matter. The amount usually present is small and cannot easily be separated completely from iron and other metals. The figures for the amount of metal taken up by food from aluminum vessels vary considerably, owing to different conditions of experiment. Distilled water, whether hot or cold, has almost no action. Hard waters, however, corrode aluminum slightly and the same is true of organic acids. Aluminum is readily acted on by alkalis, and cooking utensils are therefore liable to be damaged if cleaned too often with soda. Aluminum salts in doses that are not unreasonably high have been shown to have some action on digestive processes. There is no convincing evidence, however, that aluminum in the amounts in which it is likely to be consumed as a result of the use of aluminum utensils has a harmful effect on the ordinary consumer. (J. A. M. A., January 18, 1936, p. 218.)

Cyanide Antidotes and Medical Progress.—Recent successes with methylene blue and sodium nitrite in the treatment of cyanide poisoning are striking. As a result, the treatment of poisoning in general is receiving more attention and undergoing creditable revision. Methylene blue and sodium nitrite are far apart chemically, physically and pharmacologically, so that a common factor in their antagonism of cyanide poisoning would hardly be suspected. Yet that is exactly what has been discovered, and the discovery testifies to the value of the experimental method in medical science. This common denominator is specific and definite. Its utilization should remove all guess work from the treatment of cases of cyanide poisoning. (*J. A. M. A.*, November 2, 1935, p. 1433).

Vitamin C and Infection.—Few more cogent examples of the justification for the painstaking and deliberate methods of scientific research have developed than is shown in the story of cevitamic acid (vitamin C). Once the evidence had been obtained that a deficiency in this food factor could be produced at will in experimental animals, great effort was made to find sources of it in nature. Concentrates were made from the richest of these and, when they had been sufficiently purified, the chemical constitution was at length established. The goal of this study was reached in 1933, when the synthesis of cevitamic acid was achieved. Perhaps the story is the more thrilling because of the long history of the tacit recognition of human scurvy as a deficiency disorder. The value of cevitamic acid as a preventive and cure of human and experimental scurvy has been demonstrated repeatedly. Jungblut and Zwemer have recently reported that diphtheria toxin is inactivated by vitamin C *in vitro*. Furthermore, cevitamic acid seems to be able to protect guinea-pigs against the fatal outcome of diphtheria intoxication. Similar studies of King and Menten have demonstrated the marked influence of vitamin C in promoting the resistance of guinea-pigs to diphtheria toxin. These conclusions seem to indicate that cevitamic acid bears a relation to immunologic reactions. (*J. A. M. A.*, November 16, 1935, p. 1609).

Book Announcements

For and Against Doctors. An Anthology Compiled by ROBERT HUTCHINSON and G. N. WAUCHOPE. Baltimore. William Wood and Company. 1935. 12mo of 169 pages. Cloth. Price, $2.00.

This small volume is a compilation of the opinions of non-medical writers, expressed in different ages, about doctors and their work. The criticisms are mostly against doctors; however, one must remember that a large number of them were expressed by people who lived in an age when medicine was rated as one of the "nine low trades."

The anthology is divided into the writings of the Ancients, the Medievals, those of the fifteenth to seventeenth centuries, the eighteenth century, and those of the Moderns.

Among the opinions of the Moderns, the tribute paid to the profession by the late Rudyard Kipling in his address to the students at the Middlesex Hospital should be an inspiration to all medical students. A few others contributing to this age are: George Bernard Shaw, Robert Browning and David Lloyd George. The latter observed that "doctors are always changing their opinions. They always have some new fad."

George Eliot wrote that "it is seldom a medical man has true religious views—there is too much pride of intellect."

Napoleon expressed the opinion that "prescriptions taken collectively are more fatal than useful to mankind."

A few others living in different ages whose opinions are interesting are: Oliver Goldsmith, Henry Fielding, Samuel Johnson, Joseph Addison, Horace Walpole, Voltaire, James I. Moliere, Shakespeare, Paracelsus, Petrarch and Cicero.

To the average physician this small collection will afford interesting reading, for it gives to him an idea of what the family may say after he has departed.

J. NICHOLAS DUDLEY, M. D.

Books Available to Doctors.

Recent acquisitions at the Library, Medical College of Virginia, Richmond, which are available to members of the Medical Society of Virginia, include:

Robinson & Kirk—Introduction to psychology.
Rose & Borgeson—Child nutrition on a low-priced diet.
Rose-Gray-Foster—The relation of diet to health and growth of children in institutions.
Rucker—Leadership.
Savage & White—Food poisoning.
Savage & White—An investigation of the Salmonella group.
Sheffel, C.—Jurisprudence for nurses.
Shepard & Lawrence—Attendant nursing.
Sherbon—The child.
Shriner & Fuson—Systematic identification of organic compounds.
Simon, Sir E. D.—The rebuilding of Manchester.
Singer, E.—Fasciae of the human body and their relations to the organs they develop.
Smillie, W. G.—Public health administration in the U. S.
Thoms, H.—Classical contributions to obstetrics and gynecology.
Thomson, J. A.—Biology for every man.
U. S. Army X-ray manual, 2nd edition.
Vannier & Thompson—A textbook of nursing technique.
Winton & Winton—The structure and composition of foods.
Wolf, A.—A history of science, technology and philosophy in the 16th and 17th centuries.
Young & Russell—An investigation into the statistics of cancer in different trades and professions.
Zilboorg, G.—The medical man and the witch during the Renaissance.
Brackenbury, H. B. Patient and Doctor.
Büchner, Franz, Weber, et als. Koronarinfarkt und Koronarinsuffizienz in vergleichender elektrokardiographischer und morphologischer Untersuchung.
Chase, Stuart. Rich man, poor man.
Dodds, G. S. Essentials of human embryology. New ed.
Coman, D. R. Technique of a post-mortem examination.
Dodge, C. W. Medical mycology.
Dujarric de la Rivière, R. Le poison des amanites mortelles.
Ewalt and Hiscock. The appraisal of public health activities in Pittsburgh, Pa., 1930 and 1933.
Faust, E. C. Human helminthology.
Fletcher, H. Speech and hearing.
Freud, S. Autobiography.
Furnas, C. C. The next 100 years.
Gay, F. P. On agents of disease.
Goldsmith, M. Franz Anton Mesmer.
Harbitz, H. F. Clinical pathologenetic and experimental investigations of endometriosis.
Haslett, A. W. Unsolved problems of science.
Hayner, J. C. Regional anatomy.
History of Science Society. Johann Kepler.
History of Science Society. Sir Isaac Newton.
Huntington, and Ragsdale. After three centuries.
Huntington, E. To-morrow's children.
Jennings, H. S. Genetics.
Levine and Schoenlein. A compilation of culture media for the cultivation of micro-organisms.
Lewin, L. Gifte und Vergiftungen.
Lythgoe, R. J. Illumination and visual capacities. (Med. Res. Council, Spec. Rep. Ser. No. 104.)
McComas, H. C. Ghosts I have talked with.
Mackay, H. M. M., et als. Nutritional anemia in infancy. (Med. Res. Council Spec. Rep. Ser. No. 157.)
MacLaurin, C. Post mortem.
McLester, J. S. Nutrition and diet. 2nd ed.
Macphee, G. C. Studies in the etiology of dental caries.
Marett, R. R. Head, heart and hands in human evolution.
Massie, G. Surgical anatomy.
Meakins and Davies. Respiratory function in disease.
Medical Research Council, Spec. Rep. Ser. No. 203. The mycoses of the spleen.
Mummery, J. H. The structure of teeth in relation to dental disease. (Med. Res. Council Spec. Rep. Ser. No. 70.)
Newsholme, Sir A. Fifty years in public health.
Nicolau and Galloway. Borna disease and enzootic encephalo-myelitis of sheep and cattle. (Med. Res. Council Spec. Rep. Ser. No. 121.)
Olivier, C. P. Comets.
Olivier, C. P. Meteors.
Prinz and Greenbaum. Diseases of the mouth and their treatment. New ed.
Rand, Sweeney and Vincent. Growth and development of the young child.
Rogers and Thomas. New pathways for children with cerebral palsy.
Rose and Borgeson. Child nutrition on a low-priced diet.
Rose, Gray and Foster. The relation of diet to health and growth of children in institutions.
Savage and White. Food poisoning: a study of 100 recent outbreaks. (Med. Res. Council Spec. Rep. Ser. No. 92.)
Savage and White. As investigation of the Salmonella group, with special reference to food poisoning. (Med. Res. Council Spec. Rep. Ser. No. 91.)
Seabury, D. Keep your wits.
Sheldon, J. H. Haemochromatosis.
Sherwood, N. P. Immunology.
Singer, E. Fasciae of the human body and their relations to the organs they envelop.
Thom and Church. Aspergilli.
Thom, C. Penicillia.

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Editorial

An Aztec Herbal.

A little while ago in the Vatican Library a research worker discovered a manuscript which should be of intense interest to the American medical profession. It was an Aztec Herbal, written in the year 1552 in the famous College of Santa Cruz, Mexico City, the composition of two Aztec students, Martin de la Cruz and Juannes Badianus, both of whom had been taught medicine in the college. The manuscript consists of sixty-three folios, 6 by 8¼ inches in size, and written in both Latin and Aztec. It is exquisitely illustrated with colored drawings of some 204 herbs and trees. The Smithsonian Institute is now in possession of a photographic reproduction of this manuscript and of original water color copies of its beautiful illustrations. There are no funds available at this time for the publication of this remarkable manuscript—the oldest American herbal in existence, but perhaps some one will come forward in the near future to make possible the publication in facsimile of a find of such rare medical interest.

Nancy Shippen.

William Shippen of Philadelphia gave the first anatomical lectures ever given in America. He was a founder of the first medical school in this country. During the Revolution he served as Director General of all the military hospitals of the United States. He married Alice, the younger daughter of Governor Thomas Lee, of Virginia, and the sister of Philip Ludwell, William, Francis Lightfoot, Richard Henry, and Arthur Lee.

Nancy Shippen, the only daughter of William and Alice Lee Shippen grew up in Revolutionary times and became a belle of Philadelphia when that city was the capitol of the country and the meeting place of all the celebrities. She married Henry Livingston of New York, a scion of one of America's wealthiest families. From that time she kept a diary, and as *Nancy Shippen, Her Journal Book,* it has recently made its appearance. It is a melancholy story of a woman who in her marital choice gave up love for money, suffered the pangs of remorse and bitter disillusionment, and died a religious fanatic. It is more important as an account of Philadelphia life at a critical time in our national history, and because it sheds light upon the life of one of America's leading physicians.

Virginia doctors will be interested in the book not only for these reasons but because of the intimate relations of the Shippens with this State through Alice Lee Shippen. The Shippen's only son, Thomas Lee, married a granddaughter of William Byrd, III, of Westover, and their son, William Shippen, III, M. D., married Mary Louise the daughter of Thomas Shore, of Petersburg. Their son, Thomas Lee Shippen, also married in Petersburg, Jane Gray,

the daughter of Dr. John Gilliam. From which it would appear that while Virginians of this period found it necessary to go to Philadelphia for a medical education, at least some Philadelphians found it necessary to come to Virginia for their wives.

The Gastro-Cardiac Syndrome.

"Acute indigestion" has frequently been assigned by newspapers as the cause of sudden death. Knowing the flimsy basis upon which such diagnoses are made the medical profession has been inclined to regard all such deaths as of cardiac origin, and probably no doctor alive would say to a fellow practitioner that he has seen a patient die of acute indigestion. And yet the relation of structures above and below the diaphragm, at least as far as pain projection is concerned, is so close, that much investigation is probably still necessary before a clear understanding of all the contributing factors is reached. So closely do some of the pains of extra cardiac origin simulate angina pectoris that for want of a better term they have long been designated pseudoangina. This also is a much abused term and still is in considerable disrepute.

In recent years more than one condition has been recognized as capable of simulating the symptomatology of severe heart disease. Cardiac distress has been shown to produce reflexly pains difficult to differentiate from those of gall-bladder disease. Accumulations of gas in the stomach and colon as well as sub-diaphragmatic masses have been thought to be provocative of an equally confusing syndrome. With the work of Roemheld and Lurje and Stein we have had definite experimental proof of the fact that sub-diaphragmatic accumulations of gas may produce subjective and objective signs indicative of cardiac disturbance. Lurje and Stein extended their study to no less than sixty-eight patients and were able to demonstrate that dyspnoea and palpitation and precordial distress associated with disturbance in the position and size of the cardiac shadow, heart sounds, rhythm and blood pressure could be relieved promptly in certain people by the withdrawal of air from the fundus of the stomach, and that the same train of symptoms could be reestablished by reinflating the stomach. They found this to be true of the colon also. They found they could produce appreciable changes in certain normal individuals by controlled inflations of the stomach with air. They describe normal, hyper- and hypotonic diaphragms, and believe that hypotonia of the diaphragm is always associated with cardiac disturbance and with gastric distention. It is their belief also that the hypotonia of the diaphragm rather than the accumulation of gas in the stomach is the primary cause of the symptoms and signs and that the mechanism may be not altogether mechanical but mediated through some viscero-sympathetic arc. From these studies it becomes apparent that the stomach and colon may very well be responsible for symptoms strangely akin to those of angina pectoris. More recently the subject of pseudoangina has been further complicated by our increased knowledge of diaphragmatic symptomatology. It seems now to be accepted that in reaching a conscientious differential diagnosis in any case suspicious of angina pectoris, the physician must consider also such influences as herpes zoster, pleural adhesions to the diaphragm, eventration and herniation of the diaphragm, as well as fibrillary contractions of the muscle which have been called variously tic, chorea and flutter. All of this goes to show that pseudoangina embraces a number of extra cardiac causes widely separated anatomically, but all important in cardiac diagnosis.

Keeping Up With Medicine.

Not very long ago the name of one of America's leading physicians was employed by a lay magazine devoted to popularizing scientific news in an advertising statement which read something like this: "I enjoy your publication and value it highly as I sometimes find in it items dealing with the progress of medicine which escape me in my routine reading of medical literature." The astonishing thing is not that one of America's leading physicians should be unable to keep up with the progress of medicine through regular routine reading of medical literature since no less than four hundred medical publications are issued each year in the United States alone. The remarkable aspect of the situation is that a well-read physician can turn to a lay publication and find in it news concerning the progress of his specialty which had not previously reached him through authentic and well-established medical channels of information.

It has been hardly a month since another lay magazine in a condensed article concerning the cause and cure of influenza told its readers that bacteriologists have all but conquered epidemic influenza which in 1918 was responsible for the death of one out

of every one hundred people. The article speaks with assurance of the work of Laidlaw in England and of Francis in Philadelphia, of the identification of the virus of influenza, of a protective serum effective in animals, of the possibility of both serum and vaccine treatment in human beings. It is probable that more physicians have learned of these results from this popular digest than from the scientific journals in which they first made their appearance.

It is apparent that medicine needs some authentic digest of its progress which will be put regularly into the hands of all practicing physicians. Why should not such a great organization as the American Medical Association operate a bureau which would gather from all sources this type of information and to which all discoveries bearing upon the progress of medicine would be reported immediately? The Association now passes upon all remedies that are put upon the market and its stamp of approval is usually accepted as final. The machine which operates so well in the field of applied therapeutics might function on a wider scale by including in its work the evaluation of all reputed medical discoveries and the broadcasting of these results to a medical profession intensely interested in each new advance but as individuals obviously inadequate to such a Herculean task.

Proceedings of Societies

The Postgraduate Medical Society,

Which includes all of the counties in the Fourth Congressional District with the exception of Appomattox, Buckingham and Cumberland, held a sectional meeting in Blackstone on the afternoon of Tuesday, February 11th. At this meeting the name of the organization was changed to Fourth District Medical Society. After considering the problem thoroughly it was unanimously decided not to merge with the Southside Medical Association.

Dr. H. B. Holsinger, of Farmville, brought a patient to the clinic, which preceded the scientific program. This patient had been operated on recently, the parathyroid glands having been removed for a very severe acute arthritis and with most excellent results. Dr. C. S. Dodd, of Petersburg, reported a very interesting case of polycythemia. Dr. T. G. Hardy, of Farmville, presented a most interesting discussion on "Some of the Points in the Differential Diagnosis of the Acute Abdomen." Dr. J. A. Proffitt, of Burkeville, presented a paper on "Acute Chest Conditions," which was freely discussed. Dr. J. A. B. Lowry, of Crewe, gave a talk on "The Prevention and Treatment of Pueperal Sepsis." The secretary-treasurer, Dr. C. E. Martin, of North Emporia, gave a report of several interesting cases and made an interesting talk relative to the financial affairs of the organization.

The next meeting will be held on the afternoon of Tuesday, April 14th, in Hopewell.

The Mid-Tidewater Medical Society

Met at West Point, Va., for its regular quarterly meeting on January 28th. Dr. E. L. W. Ferry, the retiring president, presided in the absence of the in-coming president, Dr. Thomas B. Latane. The usual business session was held in the morning. At this session Dr. O. A. Bristow also addressed the Society on the new Hartmann pain killer to be used in dental operations, following which a luncheon was served the members and guests at Hotel Trice, by the local members of the Society.

At the afternoon session papers were presented by Dr. Joseph F. Geisinger, Richmond, on "Pyelitis" and by Dr. Charles R. Robins, Richmond, who spoke on a new operation for Hernia. There were many interesting points brought out in the subsequent discussions.

Among those present were Drs. C. R. Robins and J. F. Geisinger, Richmond; Dr. Clarence Campbell and son of Caroline County; Drs. Hawes Campbell, Warner Lewis, Wm. Croxton and M. H. Harris, of King William; Drs. J. R. Parker and M. H. Eames, of New Kent; Drs. J. M. Gouldin and J. N. DeShazo, of Essex; Drs. E. L. W. Ferry and W. S. Cox, of King and Queen; Drs. H. F. Hoskins, W. P. Jones and V. E. Stiff, of Middlesex; Dr. James W. Smith, of Gloucester County; Mr. Leroy B. Riddle and Dr. Otis A. Bristow, of West Point.

The next meeting will be held at Saluda on the fourth Tuesday in April.

The Woman's Auxiliary of the Society of which Mrs. Hawes Campbell is president and Mrs. M. H. Harris, secretary, also met at this time.

The Lee County Medical Society

Held its regular meeting at Pennington Gap, February 7th. The following officers were elected: Dr. C. S. Gresham, St. Charles, president; and Dr. J. B. Muncy (re-elected), Pennington Gap, secretary-treasurer. Dr. John McNiel, Pennington Gap, was elected to membership at this meeting.

Roanoke Academy of Medicine.

On the evening of February 3rd the Roanoke Academy of Medicine held its regular meeting. The program was a very interesting one.

The first number was a presentation of clinical cases by Dr. E. G. Gill, followed by a discussion of each. Dr. C. H. Bondurant, chief physician at the Elk's Home in Bedford, read a paper on "The Treatment of the Aged." He based his paper on the study of the various conditions occurring among the inmates of the Elk's Home. An interesting feature of the paper was his analysis of the 136 deaths occurring in the six years during which he has been associated with the home.

Dr. George B. Lawson gave a brief review of the clinical manifestations of hemophilia, and then presented Dr. A. B. Graybeal, of Marion. Dr. Graybeal traced the family history of a patient with hemophilia back 175 years. According to him an unusual feature in the treatment of this patient is venesection which has been required about every six weeks for two or three years and which relieves his symptoms. Dr. Lawson then presented Dr. J. C. Motley, of Abingdon, who discussed the surgical treatment of another member of this family who was admitted to the hospital with an acute surgical abdomen. Occasionally a person apparently suffering from hemophilia is found without the family history of the disease. Dr. George Kolmer, of Salem, reported such a case that he is now treating.

BLANTON P. SEWARD,
Secretary.

Lynchburg Academy of Medicine.

At the meeting of the Academy held on February 3rd, Drs. B. H. Kyle and C. E. Keefer presented a discussion on "Recent Advances in the Treatment of Fractures."

Dr. W. B. Thornhill, Lynchburg, was elected to honorary membership.

Southside Virginia Medical Association.

A meeting of this Association was held in Petersburg, December 10th, with the president, Dr. S. E. Gunn, presiding. After dinner, a special business meeting was called for the purpose of discussing the consolidation of the interests of the Southside and the Postgraduate Medical Societies. It was decided to table this matter for future consideration.

New officers were elected as follows: President, Dr. L. S. Early, Petersburg; vice-presidents, Dr. G. M. Naff, Emporia; Dr. Leta White, Petersburg; Dr. O. R. Yates, Suffolk; Dr. J. A. Grizzard, Drewryville; secretary-treasurer, Dr. R. L. Raiford, Franklin (re-elected); and executive committee, Dr. W. D. Kendig, Victoria; Dr. J. E. Rawls, Suffolk; and Dr. C. S. Dodd, Petersburg.

News Notes

Dates Selected for State Meeting.

At the meeting of the Council of the Medical Society of Virginia, early in February, the dates for the sixty-seventh annual meeting of the Society in Staunton, Va., were set as October 13, 14 and 15, 1936. We hope all members will mark these dates on their calendars now to reserve them for attendance upon the meeting.

Dr. Guy R. Fisher, Staunton, was some time ago appointed as chairman of arrangements for this meeting and he and the other Augusta County doctors are already busy with their plans to make this an outstanding occasion. It will be well worth your while to be among those present.

Virginia Conference of Social Work.

Realizing the close relationship between certain medical and public health problems and community facilities for their care, and the social problems which social workers are endeavoring to meet, the Medical Society of Virginia is this year sponsoring the Division on Public Health and Medical Care, in the

thirty-sixth annual meeting of the Virginia Conference of Social Work, to be held in Roanoke, March 19th-21st. At the last meeting of the Conference, held in Richmond in April, 1935, the Richmond Academy of Medicine sponsored this Division.

Dr. W. P. Jackson, of Roanoke, has accepted the chairmanship of the Division on Public Health and Medical Care for the 1936 Conference, and is being assisted by a committee consisting of Dr. B. B. Bagby, Dr. Carrington Williams, Dr. Wyndham Blanton, Dr. Greer Baughman, Dr. William H. Higgins, Dr. Fred P. Fletcher, Jr., Dr. Harrison Picot, Dr. Samuel A. Anderson, Dr. Basil Jones, Dr. Franklin D. Wilson, Dr. C. Lydon Harrell, Dr. Hugh H. Trout, and Dr. A. M. Showalter. This committee has held a number of meetings in the past several months in preparation for the Conference and has planned a program which should be of interest and value to those in the medical and public health fields.

Thursday afternoon's program will consist of papers and discussion of various aspects of venereal diseases. Among the speakers will be Dr. R. A. Vonderlehr, of the U. S. Public Health Service; Dr. E. E. Barksdale, Department of Syphilology and Dermatology of the University of Virginia Hospital; and Dr. Ennion Williams, Richmond.

Friday morning will be devoted to papers concerning medical care for the indigent sick and for low income groups in urban and rural communities. Among the speakers already scheduled are Dr. Edwin Harper, Dr. A. M. Showalter, Dr. B. B. Bagby, Dr. W. Brownley Foster, and Dr. I. C. Riggin.

Friday afternoon's program will consist of a paper on methods of appraising health needs and facilities; and health education and medical service in public schools, by Dr. C. L. Outland. Other papers and speakers will be announced shortly.

It is anticipated that many members from the medical and public health fields will be present at these meetings.

Elected to Fellowship in American College of Physicians.

At a meeting of the Board of Regents of the American College of Physicians on December 15, 1935, the following Virginia physicians were elected to fellowship: Dr. Harold Walter Potter, Newport News; Dr. Wyndham Bolling Blanton and Dr. Douglas Gordon Chapman, Richmond. Dr. James Newton Williams, Richmond, was elected to associateship.

Surgeon General Cumming Retires.

Surgeon General Hugh S. Cumming tendered his resignation as Surgeon General of the U. S. Public Health Service, effective January 31st, after a service of sixteen consecutive years in this office. Dr. Cumming is a Virginian by birth, and a graduate in medicine from the University of Virginia and the former University College of Medicine, Richmond. He is credited with the inauguration and completion of much work for the Service and Virginia is justly proud of his record. He has been the recipient of many honors and decorations both in this country and abroad.

McGuire Lectures and Postgraduate Clinics, Medical College of Virginia.

The annual Stuart McGuire Lectures and the spring postgraduate clinics of the College will be held April 6th and 7th. Dr. Edward C. Rosenow, Rochester, Minn., will lecture on the night of the sixth on Focal Infection and Elective Localization. He is head of the department of Experimental Bacteriology of the Mayo Foundation and professor of Experimental Bacteriology at the University of Minnesota. During the day of April 7th, clinics will be held by members of the Medical College of Virginia faculty, and at night Dr. Rosenow will lecture on Streptococci in Relation to Diseases of the Nervous System. The lectures will be held in the Richmond Academy of Medicine Building.

American College of Surgeons, Sectional Meeting.

The American College of Surgeons 1936 Sectional Meeting in Louisville, Ky., will be held on Thursday, Friday and Saturday, March 19th, 20th, and 21st. Headquarters will be at the Brown Hotel. Participating States are: Kentucky, Illinois, Indiana, Ohio, West Virginia, Virginia, Tennessee, and Missouri.

An active Committee on Local Arrangements, with Dr. Barnett Owen as Chairman, and Dr. Frank P. Strickler as Secretary, have plans well in hand for an excellent meeting.

Some of the distinguished visitors who will be present on this occasion are: Dr. George Crile, Cleveland, Chairman, Board of Regents, American College of Surgeons; Dr. A. W. Adson, Rochester,

Neurosurgeon, Mayo Clinic; Dr. Frank Adair, New York, Attending Surgeon, Memorial Hospital; Dr. Chas. L. Scudder, Boston, Consulting Surgeon Massachusetts General Hospital; Dr. Frederick W. Bancroft, New York, Associate Professor of Clinical Surgery, Columbia University College of Physicians and Surgeons; Dr. Francis A. Lederer, Chicago, Professor of Laryngology, Rhinology, and Otology, Head of the Department University of Illinois, College of Medicine; Dr. Michael L. Mason, Chicago, Assistant Professor of Surgery, North Western University Medical School; Dr. Frederic A. Besley, Waukegan, Professor of Surgery, Northwestern University Medical School; C. C. Little, Sc.D., New York, Managing Director, American Society for the Control of Cancer; Dr. M. T. MacEachern and Dr. Bowman C. Crowell, Chicago, Associate Directors, American College of Surgeons; and Robert Jolly, Houston, Superintendent, Memorial Hospital, and Past President American Hospital Association.

A cordial invitation to attend this most interesting meeting is extended not only to the Fellows and hospitals of the various States included, but to the entire medical profession at large.

Medical College of Virginia News.

Dr. W. T. Sanger, president, and Dr. Lewis E. Jarrett, superintendent of the hospital division, attended the annual congress on Medical Education and Hospitals in Chicago, February 17th and 18th.

Dr. M. B. Jarman, of Hot Springs, was a recent college visitor.

Dr. L. R. Broster, chief surgeon of the Charing Cross Hospital of London, and prominent endocrinologist, recently lectured to the students here.

There were 4,864 patient visits to the outpatient department during the month of January, these visits being made by 2,210 individual patients.

Dr. Grant Van Huysen has recently joined the staff of the college in the capacity of associate in anatomy.

Dr. Fred J. Wampler has been appointed medical advisor for the Works Progress Administration of Virginia.

News from University of Virginia, Department of Medicine.

At the meeting of the University of Virginia Medical Society on January 13th, Dr. W. C. Spain, of New York City, spoke on the subject of Hypersensitiveness to Common Foods. On January 20th, Dr. Tracy J. Putnam, of Boston, spoke on Hydrocephalus.

On February 1st, Dr. Lawrence T. Royster spoke before the Raleigh Academy of Medicine on the subject of Acute Nephritis in Childhood.

Lecture at Jefferson Medical College.

The William Potter Memorial Lecture was delivered by Dean Lewis, M. D., Sc. D., LL.D., Professor of Surgery, Johns Hopkins University School of Medicine, on February 7, 1936. His subject was "Epochs in the Development of Surgery."

The Alpha Omega Alpha Lecture was delivered in the College Building by Dr. Walter Bradford Cannon, George Higginson Professor of Physiology, Harvard University Medical School, Friday evening, February 14th, on "Serendipipity."

News from Duke University School of Medicine.

On January 23rd, Dr. C. F. Strosnider, President of the North Carolina Medical Society, talked to the faculty and students on Organized Medicine and Medical Ethics.

On January 30th and 31st, Dr. Alfred Blalock, Associate Professor of Surgery, Vanderbilt University School of Medicine, lectured on Shock and Lymphatic Obstruction, respectively.

Inquiry as to Organization of Medical Care.

The American Foundation Studies in Medicine, with headquarters at 565 Fifth Avenue, New York City, is addressing inquiries to a number of physicians in this and other States with a view of securing an impartial presentation of the present organization of medical care throughout the country and of the various projects proposed during recent years for revising the organization of that service in various respects. Feeling that the persons most competent to assist in this analysis are those who have been doing the medical work of the country for a number of years, the inquiry is addressed especially to doctors who have been in practice for twenty years or more.

The Foundation has the feeling that "more heat than light may have been developed" by some surveys. It has nothing to advocate; it does not even suggest that any essential change is in order. The purpose of the inquiry is solely to bring the competent medical opinion of the country to bear more fully than in the past upon the present confused situation. We feel your reply should be of great help to the Foundation and suggest that our readers will lend such assistance as they can.

The Tri-State Medical Association of the Carolinas and Virginia

Has just completed a most satisfactory meeting in Columbia, S. C., as we go to press. At the closing session, Norfolk, Va., was selected as the 1937 place of meeting and the following officers were elected: President, Dr. Douglas Jennings, Bennettsville, S. C.; vice-presidents, Dr. O. B. Darden, Richmond, Va., Dr. A. C. McCall, Asheville, N. C., and Dr. J. S. Fouche, Columbia, S. C.; and secretary-treasurer, Dr. J. M. Northington (re-elected), Charlotte, N. C. Those named to succeed the retiring councilors are: Dr. L. D. Keyser, Roanoke, Va., Dr. C. M. Gilmore, Greensboro, N. C., and Dr. M. H. Wyman, Columbia, S. C.

Dr. J. R. Tucker,

Williamsburg, Va., has been named by the city council of that place to serve on its Health Committee for the coming year.

Dr. Joseph Herman Meadows,

Class of '34, Medical College of Virginia, has located at Fairmont, N. C., where he is engaged in general practice. Dr. Meadows interned at Holy Name Hospital, Teaneck, N. J., after which he served as ship's surgeon on the S. S. *Exeter,* of the American Export Lines.

Drs. Joseph and Mary McCastor,

Who have been working abroad for three years, have returned to America and are now in New York City. Dr. Joseph McCastor has accepted a position as physician for the Delehanty Institute and his wife will continue her training in medicine at Bellevue Hospital. Dr. Joseph McCastor is an alumnus of the Medical College of Virginia, class of '27.

Masons Dedicate Hospital Building.

The new hospital building at the Masonic Home of Virginia, located just outside of Richmond, was dedicated by officers of the Grand Lodge of Virginia on February 12th. The building, which is a two-story structure designed to accommodate thirty-two patients, is the gift of Dr. and Mrs. Robert South Barrett, of Alexandria, Va., in memory of their son, Robert South Barrett, III, who died in infancy.

Directors of Southside Bank.

Dr. Thomas B. Latane, Stevensville, Va., and Dr. A. W. Lewis, Ayletts, Va., were re-elected two of the directors of the Southside Bank at Tappahannock, Va., at its annual meeting held recently.

Dr. Sam Silver,

First Lieutenant in the Medical Reserves, is now stationed at Camp S-81-Pa., Co. 364 CCC, Slate Run, Pa. Dr. Silver graduated from the Medical College of Virginia in 1934 and later interned at the Lynchburg Hospital, Lynchburg, Va.

Dr. John E. Gardner,

Roanoke, Va., has returned from the Temple University Hospital, where he took an intensive postgraduate course under Dr. Hugo Roesler, concerning the roentgenological aspect of cardiovascular disease.

International Congress of Physical Medicine.

The Sixth International Congress on Physical Medicine will be held at London May 12-16, 1936. It will consist of sections on kinesitherapy, physical education, hydrotherapy and climatotherapy, electrotherapy, actinotherapy, radiotherapy and radium therapy. American participants will sail from New York on May 2nd on the MV *Britannic* and return on May 31st on the SS *Transylvania.*

Dr. Richard Kovacs, 1100 Park Ave., New York, is Executive of the American Committee.

Dr. J. Paul Kent,

Recently of Roanoke, Va., has moved to Altavista, Va., where he is associated in practice with Dr. W. O. Smith. Dr. Kent graduated from the Medical College of Virginia in 1934 and interned at the Roanoke General Hospital.

Dr. W. N. Breckinridge,

Fincastle, Va., has been named president of the Botetourt County Fair Association for this year.

Dr. Booker Honored.

Dr. R. E. Booker, Lottsburg, Va., retiring member of the Northumberland County Board of Supervisors, was presented with a set of Dr. Douglas

Southall Freeman's "R. E. Lee," by Northumberland County officials and close friends with whom he had worked in an official capacity, in appreciation of his service to the county.

Dr. Mary Harley,

Sweet Briar, Va., is on a vacation of some length and at present is visiting in Honolulu, T. H.

Dr. I. C. Riggin,

State Health Commissioner of Virginia, has been appointed secretary of the Section on Public Health and Preventive Medicine of the American Medical Association.

Married.

Dr. Francis Henry McGovern, formerly of Milwaukee, Wis., but recently of Danville, Va., and Miss Rebecca Cash Lee, of Albemarle County, Va., February 7th.

Dr. Emmett Carlysle Matthews, formerly of Richmond, Va., and of the class of '34, Medical College of Virginia, and Miss Mary Hodnett, Chatham, Va., February 7th. They are now making their home at Waynesboro, Va., where Dr. Matthews is engaged in practice.

Annual Report of the Surgeon General, U. S. Navy.

In the "Statistics of Diseases and Injuries in the United States Navy" for 1934, it is stated that there were 299 deaths from all causes, giving a rate of 2.73 per 1,000 as compared with 4.09 per 1,000 for the year 1933. Fifty of these deaths were caused by motor vehicle accidents and twenty-eight by drowning. From the viewpoint of major injuries, there were no disasters in 1934. The average number of sick days per person was 10.55. Seventy per cent of all treatment days were charged to hospitals and the total number of hospital treatment days represents a percentage of sick of 2.02 per cent of Navy personnel under treatment in naval hospitals.

Root-Mandabach Advertising Agency,

Who handle the advertising of the National Drug Company for this journal, announce removal of their offices to 330 Civic Opera Building, 20 North Wacker Drive, Chicago, Ill. This move was made to secure larger space because of expansion in their business.

Dr. W. S. Whitmore,

Staunton, Va., was recently re-elected president of the Shenandoah Game and Game Fish Protective Association for the ensuing year.

Dr. William R. Weisiger,

Richmond, Va., was reappointed as district deputy grand master of the Fifteenth Masonic District at the grand annual communication of the Grand Lodge of Virginia, A. F. & A. M., held in Richmond in February.

Dr. J. S. Bachman,

Bristol, Va.-Tenn., is spending the winter at Fort Myers, Fla., and expects to return home about the first of April.

Dr. W. K. Dix,

Richmond, Va., was presented with a silver cocktail shaker by the Richmond Optimist Club, on February 18th, in appreciation of his services as a past president.

Dr. R. L. Mason,

Roanoke, Va., has been recently appointed a member of the Manassas Battlefield Foundation Committee of the Sons of Confederate Veterans. Major Edmond R. Wiles, U. S. A., of Ft. Riley, Kan., is chairman of this committee.

Mother's Day

Has taken on added significance during these past few years because of the movement to bring to the attention of the Nation the needless waste of life of mothers in childbirth and to develop better maternity care.

A special effort is being launched for the sixth time this year through the Maternity Center Association with the keynote: *Early and Adequate Care Reduces the Risks of Motherhood:* Father Plays a Leading Role.

It is interesting to note that maternal deaths last year were nearly half as numerous as automobile fatalities about which the Nation was so thoroughly aroused. There were 15,000 known maternal deaths compared with 36,400 automobile deaths. It also does not redound to our credit that the maternal mortality rate in the United States is one of the highest in the world.

The Maternity Center Association, 1 East 57th Street, New York, upon request will gladly supply suggestions for the conduct of special Mother's Day educational efforts in local communities.

Venereal Disease Information

Is a monthly publication prepared by the U. S. Public Health Service for distribution among the medical profession throughout the United States. It ranges in size from twenty-five to seventy-five pages.

The purpose of the Public Health Service in issuing this publication is to provide in condensed form a monthly summary of the scientific developments in the diagnosis, treatment, and control of syphilis and gonorrhea. More than three hundred American and foreign journals are reviewed for this work. Abstracts are made of articles describing laboratory, pathologic, and clinical work in the field of venereal diseases. The most important literature on every phase of the subject is presented in the form of brief abstracts that are easily read. An index for the year is published with the December issue. During the past year thousands of physicians found this publication useful in enabling them to keep abreast with developments in venereal disease work.

The cost of this publication is only fifty cents per annum. It is desired to remind the reader that this nominal charge represents only a very small portion of the total expense of preparation, the journal being a contribution of the Public Health Servive in its program with State and local health departments directed against the venereal diseases. If you wish to secure the valuable service which this monthly magazine provides, send fifty cents to the Superintendent of Documents, Government Printing Office, Washington, D. C.

Dr. Strother Honored.

Dr. W. J. Strother, Culpeper, Va., who retired from active practice a few months ago, was recently tendered a banquet by the Medical-Dental Society of Culpeper, in honor of his long service as a physician in that county. The banquet was held at the Lord Culpeper Hotel, and was attended by members of the two professions from the counties of Culpeper, Fauquier, Rappahannock, Madison and Albemarle, including a number of members of the staff of the University of Virginia Hospital. Feeling tributes were paid Dr. Strother by the president of the Society, Dr. H. B. Lacy, who made the statement that Dr. Strother is the oldest living graduate of the Medical College of Virginia and had been for sixty-four years a living example of the old family doctor. Other speakers included Dr. C. Bruce Morton and Dr. John H. Neff, University; Dr. James G. Brown, Rappahannock; Dr. J. N. Clore, Madison; Dr. M. B. Hiden, Warrenton; and the Rev. Thos. W. Hooper, grand master of the Masons of Virginia. Following these talks, Dr. Strother expressed his appreciation.

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Graduated in 1932, desires position in doctor's office, hospital or clinic, any location. Good references. Address "Technician" care VIRGINIA MEDICAL MONTHLY, 1200 East Clay Street, Richmond, Va. (*Adv.*)

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Physician's McCaskey System, in good condition. Price reasonable. Address "McCaskey," care VIRGINIA MEDICAL MONTHLY, 1200 E. Clay Street, Richmond, Va. (*Adv.*)

For Sale—

Burdick ultra-violet treatment lamp. A-1 condition. For information, write "Burdick," care this journal. (*Adv.*)

For Sale—

Combination electric sterilizer unit, including instrument, water and dressing sterilizers. Address "Sterilizer," care VIRGINIA MEDICAL MONTHLY, Richmond, Va. (*Adv.*)

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For sale. Good condition. At special low price. Address "Diatherm," care this journal. (*Adv.*)

Good Doctor Wanted

In doctorless community. Good location at Ladysmith, U. S. No. 1 highway. Come and settle. Get busy. For particulars, write Miss Smith, Croxton, Va. (*Adv.*)

Obituary Record

Dr. William Edward Ritter,

West Graham, Va., died on November the 11th, death being due to cerebral hemorrhage. He was born at Lycoming, Pa., seventy-two years ago, and

graduated from Jefferson Medical College, Philadelphia, in 1885. He came to Virginia in 1910 and had been a member of the Medical Society of Virginia since that year.

Dr. Carlton Lee Starkweather,

Occoquan, Va., died December 11, 1935, of heart disease. He was seventy-one years of age and a graduate of the Georgetown University School of Medicine, Washington, D. C., in 1898. Dr. Starkweather had been a member of the Medical Society of Virginia for thirty-six years.

Dr. Thomas Wister Edmunds,

Formerly of Danville, Va., but more recently engaged in eye, ear, nose and throat practice in New York, died February 1st of pneumonia and complications, at Clearwater, Fla., where he had gone recently to recuperate from a bad cold. A native of Danville, Va., he was about fifty-two years of age and a graduate from the College of Physicians and Surgeons, Baltimore, Md., in 1907. He was a member of the Medical Society of Virginia during the time of his residence in Virginia.

Dr. Alexander Irvine,

McDowell, W. Va., died at his home in that place on January 14th, after a short illness, though he had been in poor health for some time. He graduated from the Medical College of Virginia in 1887 and began practice in West Virginia in 1898, since which time he had practiced in the Pocahontas coal fields.

Appreciation of Dr. J. E. Taylor.

Dr. Joseph E. Taylor died October 24, 1935, aged sixty-three years, after an illness of four or five months. He took his academic education at old Richmond College, now the University of Richmond, and graduated in medicine from the Medical College of Virginia. In his college days he was an ardent baseball fan and made quite a name for himself as an athlete. He never got over his love for the game and was President of the Bi-State League at the time of his death.

Dr. Taylor practiced medicine for a number of years in Bedford County, and the last twenty years in Pittsylvania and Danville. At the time of his death he had been city coroner and jail physician for a number of years.

Dr. Taylor had many friends, and a faculty for retaining their love and loyalty.

We who knew him best are glad to pay tribute to our departed friend and associate.

Miss Elizabeth Taylor, his daughter, survives him.

I. C. H.

Tribute to Dr. Taylor.

Dr. Joseph E. Taylor died October 24, 1935, aged sixty-three years, after an illness of four or five months.

Dr. Taylor took his academic education at old Richmond College, now the University of Richmond. He graduated in medicine from the Medical College of Virginia. In his college days he was an ardent baseball fan and made quite a name for himself as an athlete. He never got over his love for the game and was President of the Bi-State League at the time of his death.

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We who knew him best are glad to pay tribute to our departed friend and associate.

RESOLVED, That a copy of this be sent to Dr. Taylors' family, one be given a place upon the records of the Danville-Pittsylvania Academy of Medicine, and a copy be sent to the VIRGINIA MEDICAL MONTHLY.

Signed,

J. J. NEAL,
W. B. SAGER,
P. W. MILES.

Resolutions on Death of Dr. L. A. Robertson.

Inasmuch as Dr. Luther A. Robertson was a member of the Danville-Pittsylvania Academy of Medicine,

Inasmuch as he was a man of sterling character, a native son of our community and one who had brought honor to Pittsylvania County and the city of Danville by his scientific and skillful work in his profession,

Inasmuch as he gave himself modestly and unselfishly to the service of the society and the community,

RESOLVED: *First,* That we express our gratitude at having Dr. Robertson so long with us as an associate and friend.

Second, That we recognized in him a man of fine ideals and unselfish devotion to his work.

Third, That we have missed him, and will continue to miss him in our councils.

Fourth, That a copy of these resolutions to be sent to Dr. Robertson's family and one be given a place upon the records of the Danville-Pittsylvania Academy of Medicine, and a copy be sent to the VIRGINIA MEDICAL MONTHLY.

Signed,

J. J. NEAL,
W. B. SAGER,
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